

U.S.I. JOURNAL

(Established 1870)



PRINCIPAL CONTENTS

Our Little Wars—An Appraisal
Strategy in a Changing World

Major K. Brahma Singh
Squadron Leader
K.S. Tripathi

Compulsory Military Training
Some Thoughts on Our
Tactical Concepts

Lieut-Colonel S.K. Sinha

System Concept

Major S.C.N. Jatar
Group Captain P.C. Santra

Education for Self-Reliance

Brahm P. Gupta

Tribal Tactics

Major V.K. Anand

The War in the Dark

Major R.C. Ghai

Animals in Transport

Major Michael F. Parrino

APRIL - JUNE 1967

ALL RIGHTS
RESERVED

RS. 3.00

PUBLISHED
QUARTERLY

UNITED SERVICE INSTITUTION OF INDIA

The United Service Institution of India was established in 1870 with the object of the "furtherance of interest and knowledge in the art, science and literature of the Defence Service." The Institution organises lectures, publishes a quarterly Journal, maintains a reference and lending library and reading room, and keeps pictures, medals, trophies and relics which form the nucleus of a museum

Rules of Membership

1. All officers of the Defence Services and all gazetted officials shall be entitled to become members, without ballot, on payment of the entrance fee and subscription.

Other gentlemen may become members if proposed and seconded by a member of the Institution and approved by the Council. They will be entitled to all privileges of membership excepting voting.

2. Life members of the Institution shall be admitted on payment of Rs. 160/- which sum includes entrance fee.

3. Ordinary members of the Institution shall be admitted on payment of an entrance fee of Rs. 10/- on joining and an annual subscription of Rs. 10/- to be paid in advance.

The period of subscription commences on January 1.

An ex-member on rejoining the Institution will be charged a second entrance fee of Rs. 10/-.

4. Members receive the *Journal* of the Institution post free to any part of the world. Members in India may obtain books from the library; they are issued postage free, the borrower paying the return postage.

5. Government institutions and offices, military libraries, messes, and clubs wishing to subscribe to the *Journal* shall pay Rs. 12/- per annum. Non-members shall pay Rs. 12/- per annum plus postage. Single copies of the *Journal* will be supplied to non-members at Rs. 3/- per copy plus postage.

6. If member fails to pay his subscription for any year (commencing 1st January) by 1st June of the year, a registered notice shall be sent to him by the Secretary inviting his attention to the fact. If the subscription is not paid by the 1st January following, his name shall be struck off the roll of members, if the Executive Committee so decide, be pasted in the hall of the Institution for six months, or until the subscription is paid.

7. An ordinary member wishing to resign at any time during a year in which one or more journals have been sent to him must pay his subscription in full for that year and notify his wish to resign before his name can be struck off the list of members.

8. Members who join the Institution on or after the 1st October and pay the entrance fee and annual subscription on joining, will not be charged a further subscription on the following 1st January, unless the Journals for the current year have been supplied.

9. All communications should be addressed to the Secretary, United Service Institution of India, Kashmir House, New Delhi-11.

The
JOURNAL
of the
United Service Institution
of
India

Published by Authority of the Council



(Established 1870)

Postal Address: KASHMIR HOUSE, KING GEORGE'S AVENUE, NEW DELHI-11

Telephone No : 35828

VOL. LXXXVII

APRIL-JUNE 1967

No. 407

USI Journal is published quarterly in April, July, October and January. Subscription: Rs. 12.00 per annum. Single copy: Rs. 3.00. Subscription should be sent to the Secretary. It is supplied free to members of the Institution. Articles, Correspondence and Books for Review should be sent to the editor. Advertisement enquiries concerning space should be sent to the Secretary.

UNITED SERVICE INSTITUTION OF INDIA

FOR

*The furtherance of interest and knowledge in the art, science
and literature of the Defence Services*

PATRON

THE PRESIDENT OF INDIA

VICE-PATRONS

Governor of ANDHRA PRADESH
Governor of ASSAM
Governor of BIHAR
Governor of MAHARASHTRA
Governor of GUJARAT
Governor of KERALA
Governor of MADHYA PRADESH
Governor of MADRAS

Governor of MYSORE
Governor of ORISSA
Governor of PUNJAB and HARYANA
Governor of RAJASTHAN
Governor of UTTAR PRADESH
Governor of WEST BENGAL
Governor of JAMMU & KASHMIR

The Defence Minister: Shri Swaran Singh
Chief of the Army Staff: General P. P. Kumaramangalam, DSO
Chief of the Naval Staff: Vice-Admiral A K Chatterji
Chief of the Air Staff: Air Chief Marshal Arjan Singh, DFC

President

Vice Chief of the Naval Staff: Rear Admiral S. N. Kohli, IN

Vice-Presidents

Vice Chief of the Army Staff: Lieut-General K. S. Katoch, MG
Vice Chief of the Air Staff: Air Marshal R. Rajaram, DFC

Elected Members of Council

Lieut-General Harbakhsh Singh, Vr. C.
Major-General D. K. Palit, Vr. C., FRGS
Lieut-General Moti Sagar
Lieut-General P. O. Dunn
Captain B. K. Dang, I.N.
Lieut-General S.D. Verma (Retd)

Commander R.P. Khanna, I.N.
Air vice-Marshal Shiv Dev Singh, I.A.F.
Lieut-General R. N. Batra
Lieut-General P.S. Gyani (Retd)
Brigadier E.A. Vas
Major-General R.S. Noronha

Representative Members

Director of Military Training: Maj.-Gen M.L. Thapan
Director of Naval Training: Captain S.D. Kale
Director of Training (Air HQ): Air Cdre. S. Purushotham, IAF

Ex-Officio Members

Secretary, Ministry of Defence: Shri V. Shankar, ICS
Commandant, National Defence College: Lieut-General M.M. Khanna, MVC
Commandant, Defence Service Staff College: Maj-Gen. Har Prasad
Financial Adviser, Ministry of Defence: Shri M. K. Hariharan

Executive Committee

Maj-Gen. M.L. Thapan Shri H.C. Sarin, ICS Captain S.D. Kale, IN
Air Cdre. S. Purushotham Lieut-Gen. R.N. Batra Shri G.C. Jerath

Secretary and Editor
Colonel Pyara Lal

CONTENTS

APRIL-JUNE 1967

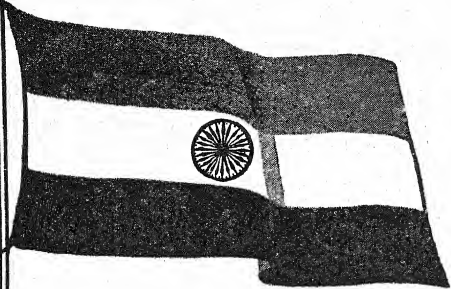
OUR LITTLE WARS—AN APPRAISAL	Major Brahma Singh	.. 97
STRATEGY IN A CHANGING WORLD	Sqdn Ldr. K.S. Tripathi	.. 106
COMPULSORY MILITARY TRAINING	Lieut-Colonel S.K. Sinha	.. 114
SOME THOUGHTS ON OUR TACTICAL CONCEPTS	Major S.C.N. Jatar	.. 127
SYSTEM CONCEPT	Group Captain P.C. Santra	.. 136
EDUCATION FOR SELF-RELIANCE	Brahm P. Gupta	.. 149
TRIBAL TACTICS	Major V.K. Anand	.. 155
THE WAR IN THE DARK	Major R.C. Ghai	.. 165
ANIMALS IN TRANSPORT	Major Michael F. Parrino, USAR, (Ret.)	.. 170
BOOK REVIEW		.. 175

REMINISCENCES (*General of the Army Douglas MacArthur*); DE GAULE TRIUMPHANT (*Robert Aron*); THE SIEGE OF PARIS (*Robert Baldick*); NEHRU: A CONTEMPORARY ESTIMATE (*Walter Crocker*); ERITREA 1641 (*AJ Barker*); SALUTE THE SOLDIER (*Eric Bush*); MAO TSE-TUNG ON WAR; (*Julius Caesar*); MAN, SOLDIER AND TYRANT (*Maj.-Gen. J.F.C. Fuller*); T.E. LAWRENCE: AN ARAB VIEW (*Suleiman Mousa*); THE BATTLE OF ARNHEM (*Christopher Hibbert*); CHARGE TO GLORY (*James D Lunt*).

CORRESPONDENCE	.. 190
SECRETARY'S NOTES	.. 192

NOTE

The views expressed in this Journal are in no sense official and the opinions of contributors in their published articles are not necessarily those of the Council of the Institution.



**IT IS TOO LATE TO BUY AN UMBRELLA WHEN THE
FIRST RAINDROPS ARE FALLING**

**CONTRAVES
SWITZERLAND**

TWO WORLD NAMES FOR DEFENCE

**OERLIKON-BUEHRLE
SWITZERLAND**

OUR LITTLE WARS—AN APPRAISAL

By Major K. BRAHMA SINGH

INTRODUCTION

After the recent fighting we are in a good frame of mind to think, too, which probably we were not after the NEFA debacle. That fighting had left us a little confused with so many factors, some within our control and others quite out of control at that late stage that had contributed towards our failure. This followed a lot more of self-condemnation than was necessary. Now that the balance has been restored an analysis of the two operations will be more rational. This analysis is extremely essential for our preparations against the threat of war. The scope for such a study is unlimited and most of it has naturally to be done at high levels. The aim of this article is only to deal with such factors as are apparent even at lower levels.

It is of greater importance for us now to analyse our failure against the Chinese and prepare hard against their threat; for, though there is no scope for complacency against Pakistan, with our present state of preparedness we shall be able to give a good account of ourselves in case she decides to attack again. The Chinese, however, we have, strictly speaking, not faced yet, i.e., not with all our might. The Chinese are good militarists and they are not likely to be complacent about their 1962 victories. During their next attack they shall definitely expect a good fight from us, though not their defeat. Our task now lies in surprising them out of their expectations by not only giving them a better fight than they expect but by giving them such a crushing blow that it sends them reeling back into their own blessed land. Before we go further let us not think that this is tall talk. Given a dynamic political and military leadership such that we got during 1965 and strong national will to fight and win, our goal is definitely attainable. If India cannot deliver the fateful blow to the Chinese army no other country can. What have the Chinese which we do not? Don't we equally share world's population and poverty? On the other hand we have the finest soldiers in the world. On our strength now hangs the fate of free Asia.

For those who are worried about the defence burden on the nation I quote below from Clausewitz :

"Even with every thing in our favour we should be unwise not to make the greatest effort in order to make the result perfectly certain. For such effort cannot produce negative results. Suppose the country suffers greatly from this no lasting disadvantage will arise, for the greater the effort the sooner the suffering will cease"

FOREIGN POLICY

EVERY country's foreign policy is primarily aimed at meeting its defence and economic interests. The ideological interests may also be aimed at but only when they supplement the defence and economic interests and not merely for their own sake. That is probably why Russia does not see eye to eye with China, nor France with USA. In the light of the severe test to which our foreign policy was put during the fighting with China and Pakistan, we should examine our foreign policy to assess whether or not we had deviated from such aims. Some very bitter but hard facts that have come to light are :

- (a) That the world opinion is not always formed by the righteousness of the cause but mostly by each nation pursuing its self-advantageous policy. It is now for consideration as to what extent our own national interests should be sacrificed for the sake of such world opinion.
- (b) That war cannot be avoided, much less by remaining militarily weak. We have to be militarily strong, if not for ourselves forcing military solutions on others but to prevent others from forcing such solutions on us. Bismarck couldn't have been wrong when he said: "It is not with speeches and resolutions alone that the great questions of the time can be solved, but with blood and iron."
- (c) That our friends are only those whose purpose we serve whether directly or indirectly and that most of them are not prepared to reciprocate the outright support which they demand from us as a price for their friendship. If we greatly need the friendship of our friends they too need ours. It is again for consideration whether or not we too should drop the idealism of friendship and not sacrifice national interests merely to show our gratitude to countries whose pursuance of policies accrues indirect benefits to us. With our size and particular position on the globe God has bestowed on us favours which we must exploit.
- (d) That we should recognise our potential enemy as early as possible and support every thing that goes to make him weaker. We should also not allow him to prepare himself for war and attack at leisure. It may mean precipitating the inevitable war a little earlier when strategically advantageous even if politically inconvenient.

FACING PAKISTAN

The recent bout with Pakistan has also come as a blessing in disguise just as did the Chinese invasion of '62. Whereas the Chinese brought to light our weaknesses, our friends the Pakistanis have also highlighted our strong points and restored the armed forces' confidence in themselves.

CAUSES OF PAK FAILURES

The Pak moves and our counter-moves are too well known to need enunciation here. The Pak defeat is, however, puzzling. They had better fire power not only as a component of infantry but also in the shape of superiority in armour and artillery. We had a slight superiority of numbers but definitely not the superiority laid down in manuals for driving them the way we did. In strategy too we can be said to be at par. The method they adopted for grabbing Kashmir was the best method open to them. Their subsequent blitz type of moves in Chhamb and Khem Karan were again commendable, but our reactions were flawless too.

MISCALCULATIONS

Pakistan, I feel, ventured on to war after a series of miscalculations which were difficult to rectify after she had taken the plunge and this spelled her disaster. Some of the major miscalculations are :

- (a) The miscalculation of the support of the people of Kashmir. The people refused to cooperate with Pak infiltrators and thus tilted the scales of war against Pakistan even before it started.
- (b) The miscalculation of the Indian Army's ability to resist a blitz action. This led them to plan materially for the shortest war that could be fought between two nations. When their attempts to cut Jammu by an advance from Chhamb and reach Delhi via Khem Karan, failed, they found the 22 days' war too long for their logistic support planned for the adventure and even for their total national resources. This is not to talk of the shattering of their self-created bogey of the 'superior soldier', 'The Patton' and the 'Sabre' on which so much was staked. The superior soldier was dislodged from picquet after picquet in Jammu and Kashmir, the Patton came to a standstill just after piercing three miles into the Khem Karan sector; and the Sabre proved to be just a match for the Indian Gnat.
- (c) Miscalculation of the dynamic political leadership existing in those days which was capable of taking quick decisions on matters of great risk. Along with it also the enemy miscalculated the Punjabi people who gave unprecedented support to the armed forces and made complete mockery of Pakistani paratroopers landed among the civil population to create disorder.

LESSONS LEARNT

Causes of Pak failures are all lessons for us to learn, but over and above these, some lessons have been learnt from our own failings. It is not intended here to enumerate all of them. It is only to emphasise some that materially affected the fighting. These are :

- (a) That there can be no short cuts to planning for an attack. The tendency to make a quick attack a hasty one must be curbed

even at the cost of taking more time in launching it than is scheduled in manuals.

- (b) That great effort must be made to obtain accurate battle intelligence before launching an attack. The process of acquisition of information should be treated as an operation by itself. In such cases where time factor is important, the enemy must be over-estimated and attacks must be launched with great numerical superiority.
- (c) With the development of such tremendous fire power the infantry is extremely vulnerable in the plains and at no time should be used without adequate support from the supporting arms, even if it means postponement of an operation due to lack of it. This is obvious from the fact that our infantry fared much better in the mountains of J&K where it was less dependent on supporting arms than in the plains. This leads to the necessity for integrating all arm combat formations (on the lines of German Panzer Division) for fighting in the plains. When our material resources prevent such an arrangement, mass attacks in overwhelming numbers should be launched, for such superiority we shall have to prepare now.

CHINESE THREAT

As stated earlier it is the Chinese against whom we should mainly prepare. The nature of the Chinese threat differs from that of Pakistan in that the threat besides being from a bigger foe led by robot military minds, is coupled with the threat of its fifth column operating behind our lines. Whereas it falls outside the scope of this article to discuss in detail the fifth column threat it would do well to emphasise here the gravity of such a threat. The Chinese are known to be masters of the technique of using the "fifth column" in conjunction with military operations to undermine totally the war effort of their enemy. The democracies have been able to do little by way of finding an appropriate method for effectively dealing with the "fifth column". The economic slogan of the communists on the other hand looks so inducive that it facilitates the operations of the "fifth column" without the supporters feeling the slightest shame of becoming traitors of their mother land.

The best way to consider the military threat from China would be, this time, to analyse rationally the causes of our defeat and then finding out methods for preventing such failures in future. Unfortunately there has been a lot of loose talks in the army and elsewhere on the cause of our failures against the Chinese. It is not uncommon to hear even from responsible people about our "running away" in face of the Chinese. This is mainly indulged in by those whose good fortune it was to have been out of the debacle and is mostly based on ignorance and hearsay. Once a debacle takes place lot of unpleasant and even shameful things do happen. The correct approach on our part would be to find out

why the debacle took place at all and not what happened during the debacle—to look for the cause and not the effects. —

CAUSES OF FAILURES

The first and foremost cause which was sufficient to cause a debacle by itself was our political speculation ruling out the possibility of a war with China and the subsequent general unpreparedness. This failing, however, has long been recognised and there is hardly any need to harp on this point any more. Some of the other causes important from the military standpoint are discussed below :

- (a) Overwhelming numerical superiority of the Chinese as also their better fire support.
- (b) Own lack of timely intelligence as also through their superior set-up capable of not only denying their own intelligence but feeding us deliberately with wrong information. Added to this was their ability to jam our wireless sets when they needed most.
- (c) No tactical reserves to cut the enemy's lengthened lines of communications nor any strategical reserves for counter-offensive to regain lost initiative.
- (d) Lack of strategical as well as tactical mobility in jungles and mountains due to lack of roads and lack of organisation for troops needed in such terrain.

TROOPS DEPLOYMENT

The manner in which we should deploy our troops in readiness to meet the next Chinese attack is dictated by the following requirements :

- (a) The need for positioning troops on likely enemy approaches to bear the initial brunt. The screen for such troops could be located on the border itself but it will have to be judiciously worked out as to where the main body is to be located. The enemy will be able to fight with strength if challenged too near the border. On the other hand, too deep a penetration if allowed will strengthen his roots within our own territory. The ideal would be if the enemy hits our positions at the end or slightly before the end of his first lap of advance. This will be the distance which he will be able to advance in the jungles/mountains self-contained and when he will be needing time to firm in for replenishment for the next lap. That is to say the enemy will be most vulnerable after about the seventh day or so of advance.
- (b) The need for strong mobile and uncommitted reserves at all levels (even at battalion level when isolated from its brigade)

for cutting his lengthened lines of communications, preventing his outflanking moves and interfering in his preparations for attack.

- (c) Strong army reserves to be deployed appropriately for launching a major counter-offensive at a place of our choosing for regaining of overall initiative. Any enemy territory occupied like this will put us in a position of strength during the peace talks.

STRATEGICAL MOBILITY

With the existing means of communications in our areas of operation, mobility of troops poses a big problem. On the other hand the importance of mobility as a factor towards our success cannot be overestimated. Mobility alone can achieve our quick reaction to enemy action, surprise during our counter-offensive and an overall economy in the use of troops. As a matter of fact our entire strategy will be based on mobility. This problem therefore needs priority handling.

One of the ways of solving the problem is of course through speeding up of the roads construction, but this will take time. Even when the roads are completed nature is going to take time in setting them. Again going over hundreds of miles of hill roads is not the type of mobility that is desired. As things stand today and if we are to meet the immediate threat of the Chinese, the air transport is the main answer, shudder though we may at the colossal requirement of air effort. Even when the roads come up the burden on the air effort may be lessened but never eliminated. This air effort will have to be an integral part of the army poised against the Chinese—the aim being the type of mobility achieved by the Americans while fighting in Korea when complete brigades were airlifted from one theatre to another greatly perplexing the enemy and throwing his plans out of gear.

The only substitute to mobility, if it can be called a substitute, is numerical superiority of troops. We must therefore decide how much to have, depending on what we are capable of mustering with our best efforts. The danger lies in our remaining undecided.

STUDY OF GROUND

One of the obvious advantages we have over the Chinese is our ability to know the ground of operations better than them. This is a very big advantage which we should exploit. In the absence of much enemy activity at present, our patrolling should be objectively aimed at acquiring this advantage. The tendency to send out patrols merely to complete a requisite number or merely as a training for junior leader must be checked. Patrolling at this stage must be for obtaining more

information about the ground as can be incorporated in our operational plans. The knowledge about the ground, however, cannot be accurate unless complete rehearsals of operational plans are carried out on it.

COMMAND AND CONTROL

One reason for a paralysation of command is the breakdown of communications within the command. The Chinese aim at disrupting enemy's communications system is an excellent method for bringing about a much faster collapse of their enemy that is possible through superior military force. In the terrain where other means of communications are impossible wireless communications assume a very great importance. To ensure that the enemy is not able to bring about such paralysation by a breakdown of our communications, the special requirement for the area of our operation is:

- (a) More powerful wireless sets than the enemy has, not only to avert any breakdown but also to be able to fling back this deadly weapon at them.
- (b) A thorough knowledge of the wireless dead spots in the area and pre-reconnoitred relay stations required to maintain communications in these areas.
- (c) The wireless communication system to be supplemented by the use of air despatch system integrated in the formation Hqs.

The second factor that can bring about a paralysation of command is the lack of intelligence regarding the enemy. The acquisition of information again seems to be the main problem. Well-planned and aggressive patrolling is the best method for acquisition of information in this area. However, vastness of the area and our limited resources of troops dictate the employment of locals for this purpose. There is therefore a great need for a clandestine type of organisation spread through every nook and corner of NEFA and Ladakh which would not only keep the fighting troops supplied with information about the enemy but also carry out counter-intelligence work. Such an organisation would also protect the innocent locals from political subversion and keep them unflinchingly on our side, a factor so vital for our victory. The Chinese, true to their creed, must be playing their political pranks in the area and to counter them we need to think much more seriously than we are doing at present.

Whatever the source of information, the accuracy of it lies in its processing. In view of the fact that the Chinese deliberately feed their adversaries with wrong information, processing of information becomes all the more important. It would need a well-trained staff operating in these areas to be able to convert information into accurate battle intelligence.

Denying battle intelligence to the enemy is just as important for command and control as in obtaining it. The greatest source of leakage is the locals and they will have to be kept at an arm's length from such information, though, of course, tactfully. Even otherwise our jawan needs to be taught to keep his mouth shut on military matters. The other source of information for the enemy is weakness in fire control. The Chinese are known to use unique tactics of launching feint attacks for making the defender to open up fire and disclose the layout of his defences. We shall have to develop an eye for differentiating their feint from real and desist from opening up on their feints even if it means foregoing the thrill of killing a few of them.

SUPPLY PROBLEM

Feeding such a large army in the border areas is a problem by itself. It implies transportation (mostly by air) of huge quantities of food supplies to some remote corners of the country. This, besides, is a great economic burden on the nation. To avoid this burden the Chinese are known to be living on the land. So why can't we? In NEFA specially there is no dearth of land and food for the troops could be grown next to the troop's barracks. The soil is virgin and practically everything grows there. For example, rice grows here on hill slopes without making any arrangements for watering the fields. The military farms could be expanded sufficiently to take on this job.

MILITARY RESEARCH

In order to develop a deterrent military power in our country we not only have to build up huge arsenals of weapons and ammunition but also to develop an independent and original military thought. Originality in war is a great weapon in itself which snatches the initiative from the enemy and puts it in our hands. A war may well be won before the enemy is able to react to our new techniques, thus offsetting any handicaps of our material deficiency. For developing new techniques and independent military thought, there is a great need for a military research department in our country where officers could be called in for study and discussions on various military doctrines and finally, submission of an original thesis. Field Marshal Slim, while stressing the need for military study, writes: "Preparation for war is an expensive burdensome business, yet there is one important part of it that costs little—'study'." Let us not neglect this part of preparation if we are to face the next war to our advantage.

CONCLUSION

The Chinese aggression of 1962 had left us self-condemned. The Pak aggression on the other hand has given us the much-

wanted faith in ourselves. Let not this faith die out! Let us use it to strengthen our faith in the ultimate defeat of the Chinese at our hands. How we fare this time if the Chinese attack us is not what should worry us. What we should ensure is that there should be no criminal neglect in our defence efforts. Every thing that can be done through our maximum efforts must be done as a matter of religious duty.

We have to grow militarily to attain our rightful place in Asia which nature has reserved for us, not only for our sake but as a moral duty to protect smaller nations against Asia's biggest bully. Our military strength lies in our sound strategy aimed at giving hell to the enemy while he is on our soil and subsequently starting an offensive to snatch initiative from him. The execution of such a strategy demands the prerequisites of adequate number of troops—mobility of such troops and an efficient intelligence network. Where we fall short of material resources, our originality, ingenuity and the renowned valour of troops will pay. The great military might of China need not be feared. She has her hands full and this time we may not be fighting alone.

In our day the advance deployment of troops of the forward strategic echelon and their complete combat readiness has the greatest significance. The nature of modern war is such that the time available for a retaliatory strike is counted in minutes.

At the present time, the problem of surprise takes on major significance, because weapons of mass destruction, used by surprise, give a series of advantages to the side using them first. Therefore, the role of correct and timely evaluation of the situation before a war and the adoption of the first decisions by the High Command grows to the same degree to which the significance of surprise has increased. In this light the correctness and farsightedness of those measures which the Party and the government are now taking in advance for preventing a surprise attack by a potential aggressor become especially understandable.

Marshal Andrei A. Grechko
Soviet Minister of Defence.

STRATEGY IN A CHANGING WORLD

By Squadron Leader K. S. TRIPATHI

INTRODUCTION

The imponderables of a new challenge to the current concepts of nuclear strategy, which had settled down to the familiar deterrent posture, have once more brought bewilderment to the *pundits* of military planning. Caught once again in a vicious circle of defence versus offense superiority, the strategists of today find the confusion worse confounded by new political developments leading inevitably, though not always predictably, to new military problems. The appearance of anti-missile missiles (AMM) on the strategic firmament coincided with the emergence of a nuclear communist China, which already militant, became more ferocious after acquiring nuclear teeth. The decay of cohesion in the NATO, the independent nuclear and political approach of Charles de Gaulle and the threat of an eventual proliferation of nuclear weapons by non-nuclear powers call for a fresh assessment of politico-military developments.

AN ERA OF STABILITY

ALTHOUGH since its inception in January 1954, the strategy of massive retaliation has intermittently been assailed by various shades of public and military opinion, it did provide a measure of stability and peace. The balance of terror, though capable of divergent interpretation, and offering the rivals a wide range of strategic postures for choice, successfully steered the world out of some grave crises. Local wars, which in the past would have erupted into world-wide conflagrations, remained local. Jenkins' ears, or even murders of visiting princes and princesses will not provide justifiable ground for wars today, not in any case, for world wars.

Today, it is possible to hurl abuses at a nation, set-fire to its embassy, organise mob attack on the embassy-staff, call heads of states and other political leaders names and even send hired assassins and infiltrators to other countries without the fear of provoking a war.

All these minor manoeuvres are possible today because the fear of the nuclear sword hanging over head proved so overwhelming as to make these incidents ridiculously insignificant for picking up the gauntlet of a war. This feeling of forbearance was fostered by a realisation that there was no defence against nuclear attacks, which were bound to lead to automatic mutual annihilation.

APPLE-CART UPSET

The apple-cart of deterrence has, however, been upset by the emergence and operational deployment of anti-missile missiles. The comfortable feeling of possessing nuclear submarines equipped with ICBMs, which could escape destruction in a surprise first attack and could constitute a formidable second strike capability, has once more yielded place to the frustrating and vicious circle of devising better defensive weapons to overcome the dangers of the offensive ICBMs.

The AMMs have upset the precarious balance of terror. Deterrence may deter no more. The AMMs will nullify the ICBMs, and obviously the country which has a defensive ring of AMMs, would hold the enemy, having no AMMs, at its mercy. While it would stay secure behind the facade of AMMs, it would be in a position to knock down the enemy with its ICBMs, unless the latter restores the balance by arming and defending itself by the AMMs.

SOVIET EMPHASIS ON MISSILE DEFENCE

Early in the growth of deterrence as a posture of nuclear strategy, the Soviet military leaders figured out the necessity of developing a missile defence. Their idea was to develop a defensive force which could effectively nullify the American ICBM threat. If they succeeded in doing so, they thought, that it would deter the US from striking first, even if the Soviet Union offered a major provocation, short of a direct attack on the United States.

In the wake of anti-missile missiles rush, both the United States and the Soviet Union proceeded to develop their weapons with feverish urgency. The Soviet Union developed and achieved operational role for at least two AMMs, code-named Griffon and Galosh. More are scheduled to follow. These new weapons were deployed in defence of major Soviet cities after thorough operational tests. A screen of nuclear tipped AMMs may in the course, be the mainstay of the Soviet defence system. These missiles are capable of reaching out into the pace to destroy the oncoming enemy missile travelling at speeds of 18,000 miles an hour.

The development of these missiles was, however, not kept secret by the Soviet leaders. A well-planned advertisement being one of the basic ingredients of nuclear deterrence, the Soviet leaders took every opportunity to sell the operational capability of their new addition. As early as October 1961 Marshal Rodion Malinovsky claimed that the Soviet Union had solved the problem of missile defence.

In March 1962 the then Premier, Mr. Nikita Khrushchev, using his inimitably forceful metaphor, announced that the Soviet missiles could

hit "a fly in space". Later in July the same year, making a reference to the operational capability of these missiles in a defensive role, he said that the Soviet Union was capable of knocking down the incoming missile.

The gap between the development of AMMs and their operational deployment was obviously narrowed down by the Soviet Union with great speed. The screen of these defensive missiles started spreading, covering major industrial and population centres. The U.S. spy satellites and other evidences reported this new defensive development and confirmed the Soviet claim. The press correspondents covering the extraordinary session of the U.S. Senate on 11 April 63, also confirmed the U.S. belief that the Soviet Union had already deployed a network of operational AMMs around Leningrad.

CURRENT STRATEGIC THINKING IN THE U.S.

The current thinking in the United States has been to offer time to the enemy for rational thinking by launching the first strike in such a manner as to eliminate any implication of challenge inevitably calling for response. A declaration is made that the first strike constitutes no more than a limited warning and that consequently there is no necessity for it to evoke a 'spasm' retaliation. Moreover, to deter the enemy from making such a hit-back, a large scale and invulnerable counter-value capacity (i.e. capacity to destroy civilian centres of population) is held in reserve. Under the umbrella of this deterrence, it is then announced that one is prepared to take limited or even 'sublimited' tactical or strategic nuclear action. The hope is that by this method some impression would be made on the enemy and that he would be persuaded to accept a compromise before any form of escalation has taken place. If this was not enough, the level of the argument would be raised and a counter-force attack (with military installations as targets) launched, but still leaving the enemy population untouched in order to avoid forcing them into a counter-city riposte. If finally there was no alternative to strategic counter-city action, this stage would only be initiated progressively by very limited partial attacks. The idea is that, faced with these increasing threats, one or the other of the two participants would be the first to realise the folly of increasing the nuclear stakes and initiate discussions to avoid the massive destruction of the paroxysmal nuclear exchange.

A considerable portion of the retaliatory forces today comprises the Polaris submarines, Minuteman in concrete silos and similar devices. The wisdom therefore, of spending astronomical sums in building up a worthwhile counter-force capacity, when in any case one is going to be subjected to an intolerable reposte is doubted by many. Some theories say that the Russians have been quite right in not embarking upon a counter-force policy because with a comparatively small number of strategic

weapons, they are in a position to threaten the main American cities with destruction and it is quite enough to paralyse the far larger and far more costly American nuclear arsenal. Finally, as General Beaufray of France asks, is it really possible to differentiate between military targets (counter-force) and civilian targets (counter-city)? Any attack on the former will inevitably entail considerable damage to the latter.

Although counter-force action must inevitably overflow to a serious extent into the civil population, a counter-force capability differs radically from that of counter-city the former presupposes an ability to hit each of the military targets separately, whereas attack on the civil population necessitates merely generalized destruction, requiring far fewer projectiles.

A STRATEGY OF OFFENSIVE

Whether it is the strategy of counter-force or counter-city, the present military thinking in the U.S. is offensive-oriented. In spite of the warning of many theorists to avoid the pitfalls of too great a reliance on deterrence and to divert part of the attention from offence to defence, the strategic concept has steadily grown on the assumption that thermonuclear wars are unthinkable because they are unprecedentedly destructive. Defence was therefore considered futile, for there could be no defence. Herman Kahn enumerates at least five different possible types of attacks, which the United States is prepared to launch, under different provocations, each attack meant for a different targeting objective :—

1. Countervalue (Population-property damage)
2. Counterforce+Countervalue (Population-property military)
3. Straight Counterforce (Narrow military consideration only)
4. Counterforce+Bonus (Population and property as a bonus)
5. Counterforce+Avoidance (Population and property actively spared)

RETHINKING

Even though the Soviet Union had perfected her anti-missile network and had propagated the operational success of these missiles, the Kennedy Administration, guided by the advice of its defence-science experts had paid little attention to the development of the defensive missiles. These experts argued that the development of the U.S. anti-missile missiles would provoke the fears of the Soviet Union and would bring the dangers of war closer than when the balance of terror was maintained at the level of offence.

However, recently the fear that the formidable offensive arsenal may

after all be negated by the anti-missile missiles, and the United States having exhausted all her polaris and minuteman ICBMs from the nuclear submarines and concrete silos, may lie defenceless to the enemy riposte, has brought about an agonising reappraisal of the defence strategy. It is now recognised with considerable concern that the U.S. strategy is behind time. Nuclear shield, represented by the AMMs, will not only destroy the nuclear sword, represented by ICBMs, but will also bestow incomparably strong position to the wielder of the shield, who having got the better of the initial clash, would dictate terms by his own ICBMs.

LATEST U.S. ICBM

The Soviet deployment of AMM, has, however, provoked no alarming repercussions in the Pentagon. Mr. McNamara feels the strategy of deterrence based on the offensive, continues to hold good. His reaction to the revelations of the U.S. spy satellites about the Soviet AMM network has been a quiet reassessment of the value of the Polaris ICBMs and the need to replace them with the latest American missile, called Poseidon. Deriving its name from the sea-god of Greek mythology, the Poseidon missiles, would tear the AMM network and carry their attack to the enemy heart-land. They are equipped with penetration aids and are capable of confusing the radar and electronic devices of the enemy. It can distinguish between dummy warheads and genuine ones.

The Poseidon carries more than one warhead. Experiments are under way to equip it with three to fifteen separate nuclear packages, each package hitting a different target, thus while a few would engage the enemy anti-missile missiles, the others would escape to attack the enemy heart-land. Poseidon is undoubtedly a wonder weapon, each carrying a two megaton capacity bomb against one megaton hydrogen bomb carried by a Polaris missile. One Poseidon would therefore be equal to 100 Hiroshima bombs.

Mr. McNamara is contemplating to replace the 506 Polaris ICBMs, spread over 41 submarines, with the Poseidons, which besides being infinitely more effective than the former, are considerably cheaper too.

AMERICAN AMM SYSTEM

Even though the emphasis is on acquiring and deploying offensive weapons, the United States has not been totally unmindful of the need to develop an AMM system. The Americans have reportedly solved the basic problem in the complex task of intercepting an ICBM with an anti-missile missile (AMM). The currently operational Nike-Zeus AMM can be readied and fired in time to meet an oncoming ICBM at a 20-mile range and disrupt it with a nuclear burst beyond the atmosphere. Even if an ICBM lets loose several decoys it can be destroyed with the aid of

evaluation radar which supposedly distinguishes between a decoy and a real warhead. While the Nike-Zeus thus provides a measure of security by long-distance interception of H-bomb warheads, it is supplemented by an entirely different weapons system. This AMM, known as Sprint, seeks out and destroys flying ICBMs at a 20-mile range and is intended to safeguard point-targets such as ICBM Silos. The U.S. is planning an even more complicated system known as Nike-X. Its cost is astronomical; the U.S. has already spent on it \$2,000 million in research and development and, when operational in the 1970s, the total bill would be more than \$20,000 million. The tragedy of it all is that the impending anti-missile race may upset the current nuclear stalemate. The super Powers are, indeed, approaching the imponderables.

Following the lead of the Soviet Union in perfecting Anti-missile missiles, the United States also embarked on a programme of conducting underground massive atomic tests. As anti-missiles would require large amounts of fissionable material, particularly plutonium, chances of the two super Powers, reaching an agreement on freezing or reducing the productions of fissionable materials are ruled out.

The Soviet Union has already conducted underground blasts in the megaton range in the course of its experiments of the anti-missiles. On 20th December 1966 the United States Atomic Energy Commission also carried out an underground nuclear test of very great intensity near Las Vegas, Nevada. This blast had a force of 200,000 to 1,000,000 tons of TNT and it dug a huge underground cavern. The United States has planned a series of these underground tests to bridge the present gulf between her present offence-oriented strategy and the Soviet Union's anti-missile-missile based defensive posture.

The supporters of the AMM programme in the United States are not deterred by the fabulous cost of the project, which in comparison to the 3 billion dollar bill of the Poseidon series of ICBMs, will cost as much as 30 billion dollars. Mr. McNamara who has been so far in favour of Poseidon, the new offensive missile, has emphasised that these weapons would not only be more effective but also cheaper. However, arguments about cost would not be permitted to be an overriding consideration where the crucial issues of defence is involved. Those who advocate about the AMM programme—and they form an articulate and influential section—argue that the cost balances against the possibility of saving 70 million American lives. The Joint Chiefs of Staff, who have direct access to the Congress, unanimously support the protagonists of the AMM programme. Regretfully but surely the Johnson Administration would move ahead with initial measures to offset Soviet deployment of her new missile defence system.

Speaking at a news conference at Washington on 21st December, 1966, the day following the giant underground nuclear testing, Mr Dean Rusk, the Secretary of State, said: "We would regret very much the lifting of the arms race to an entirely new plateau of major expenditure."

CHINA WILL FOLLOW

The communist China which is already credited to possess short-to-medium range missiles (400 to 1,500 miles) is expected soon to acquire nuclear tipped ICBMs. Many strategists have been surprised at the meteoric rise of China as a nuclear power. Some even credit her to be ahead of France, which seems to be trailing behind in fission and fusion technology and now in missiles also. One theory, disturbing the United States strategists, is that Peking is testing an air-breathing missile instead of a ballistic missile. These missiles are designed to be fired from submarines and China has 31 of these. This report has been given by Senator Jackson who, as Chairman of the Military Applications Sub-Committee, is reputed to be extremely well informed in Chinese nuclear developments.

The inevitable U.S. conclusion is that China has brought the danger of a surreptitious attack on the United States much closer both in terms of time and space. China's rate of progress and its ingenuity in reducing the sequence which other countries have taken to reach the same point in nuclear weapon development, is considered amazing.

Even if China had only a conventional ballistic missile designed to deliver atomic warheads on targets, the immediate military potential would be disturbing, according to some military theorists, to the Soviet Union no less to Japan, Formosa, India and other countries on the Chinese periphery.

There is little doubt that China will in due course embark upon the manufacture of AMMs also, notwithstanding her depleted economy.

CHINA PREPARED FOR NUCLEAR WAR

Chairman Mao, who is determined to create "very swiftly a new, thousands of times higher, and truly beautiful civilization "on the debris of a dead imperialism" is convinced that the world would survive a nuclear cataclysm. In an interview published in the daily, "Jornal do Brasil", at Rio de Janeiro, on 11th December, 1966, the Chinese Foreign Minister and Vice-Premier Mr. Chen Yi, said that Chinese nuclear bombs could "wipe off cities like New York and Chicago", if the U.S.A. launched an atomic attack on China.

Although China herself has been accused of trading indirectly with the United States in setting up defence installations in South Vietnam

against the Ho Chi-minh Government, Marshal Chen Yi, speaking of an America-Soviet alliance, told the Brazilian newspaper that the Soviet Union had 13 divisions on the Chinese border, which were shifted from Eastern Europe. "We are not afraid", said the Chinese Foreign Minister, "of a Russian-American attack and we are ready for war."

NATO POLICY RE-EXAMINED

Under an assignment from President Johnson, a high-ranking member of the eastern foreign policy establishment, Mr. John Jay McCloy recently submitted his recommendations about a new rationale for the American role in the North Atlantic Treaty Organisation at a moment when this august alliance is beset with a host of woes. Mr. McCloy studied carefully the threat, the strategy, the forces and the costs, affecting the Atlantic alliance in general, and the American role in Europe in particular.

Reviewing the threat to the western world, McCloy concluded that as distinct from the communist intentions, the threat from the Soviet Union and other East European Powers was overestimated. Although he does not recommend any significant departure from the strategy of "flexible response", he does take into account the Soviet emphasis on missile defence. He has recommended a cut in the American forces in Western Europe.

The importance of these changes in the NATO, which under normal circumstances would have hit the headlines in the world press, has however been eclipsed by the happenings in Vietnam.

CONCLUSION

The politico-military developments of today are so complicated that it is difficult to devise a clear-cut strategic posture. There may be some startling new political alliances, necessitating new military groupings, and new strategic concepts. However, the overriding issue of survival in a thermonuclear age may continue to dominate strategic thinking, or conversely, Chairman Mao may plunge the world into darkness by unleashing a nuclear cataclysm in his fond hope of creating a new civilization. Quite a few responsible defence experts feel that the imponderables of a global holocaust must be pondered and the world be kept ready to meet the challenge, without neglecting the requirements of conventional and guerrilla warfare. What is required today is a highly versatile and flexible strategy capable of meeting all kinds of threats, from pin-picks of the irregular, partisan combatants to the mighty ICBMs. There being no chance of achieving total disarmament in the foreseeable future, eternal vigilance and constant review and readjustment of defence strategy in the light of the latest technological progress would be the only guarantee of warding off a catastrophe.

COMPULSORY MILITARY TRAINING

By Lieut-Colonel S. K. SINHA

INTRODUCTION

It is an unfortunate fact of our national history that we seldom repelled an invader. Our long history contains numerous examples of invaders successfully penetrating our frontiers and establishing their rule over us. If our armies lost battles because of the inevitable traitor betraying us at the critical moment, our people suffered foreign rule because of their failure to conduct an effective national struggle. The failure to offer suitable resistance may be traced in no small measure to the pernicious caste system. Since fighting was the concern of one caste only, the rest of the people could not step into the "forbidden sphere" to conduct a people's war. During the last two centuries, when Britain held sway over India, yet another form of differentiation came into being—the concept of martial and non-martial classes. Incidentally, it was perhaps not accidental that only those who remained loyal to the British during the great revolt of 1857 were accepted as martial classes.

From time immemorial and in every community, the right to bear arms has been the mark of a citizen's liberty and power. However, the British for their imperial reasons, had imposed the Indian Arms Act upon us. This held us in a virtually disarmed state. On our gaining independence in 1947, there was a natural desire to break the old shackles that bound us, including of course the artificial distinctions based on the caste system or the martial class theory.

In the light of these facts of history, the demand for compulsory military training for our citizens is understandable. This demand has now assumed added significance because our frontiers are threatened by powerful and hostile neighbours. Whereas we should appreciate the emotional urge behind this demand, we should nevertheless subject it to rational scrutiny before arriving at any conclusions. This entails that we must be clear about the implications of compulsory military service and relate this concept to our requirements for defence and national development.

COMPULSORY MILITARY SERVICE

COMPULSORY military service for all men capable of bearing arms was an accepted fact when human society was organised on tribal basis. However, conscription in the modern sense owes its origin to the Napoleonic era. The French Revolution saw the beginning of mass armies and compulsory military service as it is known today. The first law on conscription was passed by the French Directory in 1798. It enabled

* This article was entered for 1964 Gold Medal Essay Competition.

Napoleon to conscript over 2½ million soldiers between 1800 and 1813. This was an immense figure for those times although it was later dwarfed by the vast armies of the two world wars. During these two wars, the belligerent powers mobilised their manpower and allocated them not only to the three fighting Services but also to their defence industries which had become a vital part of their war machine. Conscription on these lines in India will be something staggering. In terms of numbers, it will be a mathematical nightmare. With a population of approximately 450 millions, allowing for half that number to be women, we have about 225 million men in the country. The latter figure may be reduced roughly by half to exclude children and old people. The resultant 112 millions may again be reduced by half to cater for the requirements of industries, agriculture, administration and other essential services. This would still leave nearly 60 million people for the Armed Forces! To equip, maintain and employ such a large force within the frontiers of India is beyond comprehension, particularly when one recalls that the total armed strength of the fifty-seven belligerent nations, both Allies and Axis, in the last war over a period of six years was seventy millions, spread throughout the globe.

There is yet another form of conscription based on short-term compulsory military service. A large reserve of trained manpower is created which can be quickly mobilised when required. This concept also had its beginnings during the Napoleonic era. After the battle of Jena in 1806, Napoleon restricted the size of the Prussian Army. The Prussians skilfully got over this restriction. They used their small cadre of professional soldiers like a "sausage machine" to train batches of conscripts in a short time and then put them on the reserve list. This gave them a large reserve of trained manpower which they later employed in their fight against the French. After the Treaty of Versailles, Von Seeckt also worked on similar lines. Apart from overcoming any political restrictions, this form of conscription is also economical. Consequently, it is now the accepted system in peace for nations which feel that they are threatened by war. Almost all the major powers of the world involved in the cold war have one variation or the other, of this form of conscription. The variations are as follows :

- (a) Universal National Service as in the UK, the USSR and France where all fit young men on reaching a given age, normally between 17 and 20, do full-time military service for a short time. Thereafter, they have to do part-time service in non-regular units or in reserve. In Israel even unmarried women are conscripted for military service on the same basis as men.
- (b) Selective National Service as in the United States, where only a proportion of young men are drafted for full-time service, partly according to their occupation and partly by ballot.

- (c) Part-time National Service as in Australia where most of a young man's service is part-time.

It is obvious that if we wish to introduce compulsory military service in India, it will have to be the latter form of conscription based on short-term service creating a large reserve of trained manpower. However, even in this case, the problem is of immense magnitude. This may be illustrated by quoting figures. In Britain 232,766 young men of the age of 18 were enlisted in 1955 for two years national service. Since we have a population nine times as large as Britain's, in our case the figure involved will be over two millions a year. On the basis of two years compulsory military service, we will have four million national service men in our Services at any one time. The training of four million such personnel poses tremendous requirements for armament, clothing and equipment. It would completely swamp our present permanent cadre of the Services, quite apart from its grave repercussions on our national economy.

ARGUMENTS FOR INTRODUCING COMPULSORY MILITARY SERVICE

Advocates of compulsory military service advance several arguments in favour of its introduction in this country. A student of Indian history may suggest that our immense land space had great defence potential. Akbar started his Deccan Campaign in 1599, and 108 years later when Aurangzeb died, Mughal Armies were still fighting on the banks of Tungbhadra over 500 miles from Kanyakumari. Similarly it took the British full 100 years to subjugate India, starting from their first intervention in Arcot in 1748 till the end of the Second Sikh War in 1848. All this delay was imposed on these invading armies without any people's resistance as such. If through compulsory military service, we can ensure that an invader besides facing problems of space will also have a nation in arms against him, we can guarantee successful defence of our country. Any invading hordes coming into India would be doomed to perish like Napoleon's Grand Army or Hitler's Panzers in Russia. On the face of it, this certainly appears an attractive theory but it ignores two important points. Firstly, modern inventions have greatly altered the speed and mode of warfare. During the last war, Poland was conquered in three weeks, France in 35 days and Greece in 18 days. Secondly, modern wars of expansion are being fought more on the ideological and economic plane. Military campaigns with a view to annexing whole countries now appear to be a thing of the past. This, of course, does not rule out border conflicts with limited military aims.

It is argued that though our war potential in terms of industrial productivity is low, we have a great advantage in terms of our large manpower. It would be more expedient for us to organise our Armed Forces.

with emphasis on massed manpower rather than on foreign arms or equipment. Massed manpower can be achieved through conscription. Under similar circumstances the Russians after the Revolution of 1917, chose a large army equipped with indigenous arms instead of a small professional army equipped with foreign arms. In his lecture to the United Services Institute on 'Manpower and Modern Arms', given on the 23rd of February 1954, Lt-Col. (now Major General) DK Palit developed this line of argument. He stated: "In the Korean War, the Chinese Communists proved that manpower could be so harnessed and organised as to be wielded as a nation's strategic weapon. The retreat from the Yalu in the late autumn of 1950 was essentially a victory of sheer manpower over modern arms". It can also be argued that populationwise, India is the only country which can answer the challenge of China's numerous millions. In our confrontation with China, we must exploit our immense manpower resources. These are no doubt weighty arguments but they do not take full cognisance of certain important facts. Wars have seldom been won on the basis of quantitative superiority. What is required in battle is primarily qualitative superiority, which can only be achieved by superior equipment, superior training and superior leadership. Our own history amply proves this point. It was not through lack of numbers that our armies lost at Hydaspes (Jhelum), Tarain, Panipat, Plassey or Assaye. The analogy of the Chinese hordes in Korea when the United Nations forces fought like a boxer in the ring with one hand tied behind his back, is not convincing. Moreover, what a totalitarian regime can do in terms of harnessing and expending its human material, does not necessarily apply to a democratic country where great premium is put on individual freedom.

India had for long been disarmed being an appendage of a foreign power. This combined with restrictive recruitment to the Army based on the martial class theory, has led to large sections of the people having no tradition of martial activity. They have become soft and lack stamina and endurance. Through compulsory military service we can foster national integration, discipline and physical toughness. These are no doubt laudable aims but conscription is hardly the way of setting about to achieve them. There are other ways in which these national deficiencies can be overcome. Para-military organizations, territorial units, cadet corps and other volunteer formations can adequately serve these needs. Concurrently, recruitment of suitable material to the Services from the so-called non-martial classes should also be encouraged.

Yet another argument is that the obligation to defend the country should be shared equally by all. A modern army is a nation in arms. The risks and dangers of war should be distributed evenly and not placed on particular communities only. Almost all the developed countries in the

world today have compulsory military service in one form or another. Therefore, we must follow suit in India. This line of thinking also ignores certain important facts. In modern times, the worker in the factory or the peasant in the field has to play as important a role in the defence of his country as the soldier on the battlefield. What with missiles and aerial bombardment, the risks run by them are no less. Moreover, the example of developed countries with limited population and full employment is hardly applicable to a developing country like ours with staggering unemployment and under-employment. Irrespective of the target we set for the strength of our Services, there will be no difficulty in recruiting that number of personnel on a voluntary basis. After all, during the World War II, the British recruited two million soldiers in this country—largest volunteer army in history. If they wanted to recruit more soldiers, they could easily have done so. It would of course be only stating a truism that a volunteer long-term army's professional proficiency is bound to be much higher than that of short-term conscripts. However, although there may be no shortage of unskilled personnel coming forward for recruitment, there is likely to be a shortage of technical personnel like doctors and engineers. We are already experiencing this shortage in our current efforts to expand the Services. Therefore, some form of compulsory military service for personnel in this category may well have to be resorted to.

DEFENCE REQUIREMENTS

Having examined the various arguments that may be advanced in support of introducing compulsory military service in India, we may now relate the necessity for this to our defence requirements. As a nation, we have no territorial designs or expansionist ambitions. Therefore, our defence requirements are based on protecting our national sovereignty against aggression. Being a non-aligned country, we have no international commitments which will automatically drag us into a global conflict between the two power blocs. This also implies that we are unlikely to be the victims of aggression of either of the two great world powers. There is, therefore, no need for our Defence Services to be geared to match the military might of these giant powers. In any case it is futile for us to think in those terms. It is clearly beyond our capability to attempt to do so for generations to come. In the unlikely event of either of the two great powers or power blocs, choosing us as the victim of their aggression, we will have to rely primarily on the other power or bloc to come to our rescue.

The military threat to India today and for the foreseeable future is from China and Pakistan. The recent collusion between these two powers indicates that there may be a simultaneous threat to us from both these powers. This does not necessarily mean that in terms of numbers, our

Armed Forces must match the combined strength of these two powers. That again is clearly beyond our resources, and what is more, in attempting to run such an arms race, we may succumb to the economic and subversive threat directed against us by our enemies. What is, however, necessary is that our Armed Forces should be sufficiently strong to deter these countries from launching aggression against us in the hope of quick results. We should be able to halt their aggression for some time and make them pay heavily for their adventure. The time so gained would enable world opinion to mobilise and force their withdrawal. The pattern of operations visualised is something like what happened in Suez in 1956 for that matter, on our northern borders in 1962. The only difference being that our forces should be much stronger so as to give the aggressors a black eye and convince them of the futility of their endeavour. It is for our General Staff and Air Staff to estimate as to what should be the strength of the forces required to stem such aggression, taking into account the terrain and the enemy's strengths likely to be deployed against us. Currently, as reported in the press, the thinking appears to be that we need an army of twenty-one divisions and an air force of forty-five squadrons for this purpose. Naval requirements have deliberately not been touched upon because for the present, our potential aggressors do not present any major naval threat. Whatever be the strength recommended by the General Staff and the Air Staff, the important thing is that these numbers must be readily available to take the field at short notice. We cannot afford to plan on the of having sufficient time to put any slow moving mobilisation plans into operation. If our defence thinking is based on having a small standing force to be strengthened by mobilisation in an emergency, we would be tempting the potential aggressor to commit aggression in the hope of quick and easy victory.

So long as the numbers required for national defence can be recruited on a voluntary basis into a long-term professional army, navy and air force, there is no need for us to think in terms of conscription in any form. However, where we cannot meet our requirements from voluntary recruitment, as on the technical side, some form of compulsory military service will be necessary. Further, it may neither be economical nor advisable to have certain technical units like a railway operating company in our order of battle. Such units may be required only in the event of war and there may be little scope for the Army to employ and train them in peace. These units should form part of our Territorial Army.

An aggressor always has the initiative in any conflict. He may also initially achieve surprise. In these circumstances and when we are faced with two potential aggressors, it is inevitable that hostile forces may penetrate our frontiers and secure lodgements in our territory before they can be halted. Our civil population in any such areas overrun by

the enemy, should be in a position to offer resistance and start guerrilla warfare. To enable them to do so, we must arm our people in the border areas and give them the necessary training now. Since the military threat visualised is in terms of border conflicts with limited military objectives, ending with the cessation of hostilities under pressure of international opinion, this requirement of arming and training our civil population applies to the border areas only. Such a measure will also be an effective deterrent to the numerous border incidents involving civilians that have now become a common occurrence.

Allied to the military threat is also the threat of subversion. The latter may draw inspiration from ideological or other affinities, and may be directed from across our frontiers. In preparing ourselves for a conflict with China and Pakistan, we have not only a military problem but also a major internal security problem. The fighting Services should not be asked to combat any fifth column activities, when all their resources may be strained to the utmost fighting on two fronts. There is, therefore, a requirement for strong and effective security forces in the form of the civil police and home guards. These forces assisted by strong public opinion should be able to combat this menace without distracting the Defence Services from their primary task of defending the national frontiers.

NATIONAL DEVELOPMENT

Despite the hostility of our two neighbours towards us, the greatest danger facing us is not so much in the military as in the economic sphere. The war we face calls for not less but more emphasis on normal development activity. Our people live in conditions of staggering poverty. The average Indian's income is Rs. 291 per annum which works out at a mere 80 naya paise per day. The elementary necessities of life like food, housing and health facilities are either completely denied to the bulk of our people or are available in a very marginal form indeed. Our biggest problem is, therefore, to combat this spiralling poverty and raise the nation's standard of living. This can only be done by increased national output. Our agricultural and industrial production must appreciate to a marked degree.

It may be said that 'being' must take precedence over well-being or 'living' before standard of living. Though this may be true, we must not allow ourselves to be completely carried away by such an approach. Conversely, it is equally true that if we concentrate all our attention on defence, then we will find that what we are trying to defend is just a geographical boundary within which live destitute and starving millions! We cannot think in terms of defence or development in isolation. The two are complementary. Modern defence requires a developed industrial

base. This base can only be provided through economic growth. Similarly without security from external aggression, it is futile to talk of economic progress. We have, therefore, to suitably allocate our resources to enable the country to fight simultaneously for both national defence and economic development. It boils down to our working out the correct priorities, rather than completely ignoring the one or the other.

Our pre-Emergency budget in 1962-63 provided for a defence expenditure of Rs. 386 crores, that is, 25 per cent of the then national revenues. With our defence expenditure raised to Rs. 708 crores in 1963-64, our outlay on defence is now 38 per cent of our revenues. It is interesting to compare our defence expenditure with that of some other countries. The USA spends 63 per cent of her revenues on defence and the UK 26 per cent. These comparative figures are, however, misleading. A rich country can afford to spend not only more, but also a greater percentage of her income on defence. In the case of a poor country like ours, the amount left over after catering for 38 per cent on defence expenditure, is barely sufficient for our other equally essential requirements. It follows, therefore, that we cannot without ruining our national economy afford to spend any greater percentage of our revenues on defence. We also must not lose sight of the fact that an important aim of Chinese aggression against us was to dislocate our economy by forcing us to divert our resources from national development.

For maintaining our Services at the strength of approximately half a million when our defence budget was Rs. 386 crores in 1962-63, the expenditure on salaries, food, clothing and connected expenditure amounted to Rs. 225 crores. Even with short-term compulsory military service, we shall have about four million personnel in the Services. Given the present standard of remuneration and maintenance, our direct recurring expenditure on our Services totalling four millions, would amount to approximately Rs. 1,500 crores. This figure excludes various non-recurring expenditure as also military hardware requirements. These expenses in 1962-63 amounted to Rs. 161 crores. Even with the concept of a large militia equipped with light and indigenous weapons, our expenses on this score must inevitably go up by at least two to three times, if not eight times. The resultant figure on this account would be something in the region of Rs. 500 crores. Thus, we will be faced with a defence budget to the tune of Rs. 2,000 crores, which is in excess of our current total national revenues!

This broad survey of defence expenditure should convince us that even if compulsory military training was desirable from the defence point of view, our national resources just cannot bear the strain of such a venture. Our defence expenditure has already reached the maximum we can afford to spend on our national insurance. Any further increase may jeo-

paradise our national economy and may also dangerously weaken our defence potential, for want of a sound industrial base.

VOLUNTARY MILITARY TRAINING

There is no necessity for introducing compulsory military service in the context of our defence requirements nor is it something our economy can support. There is, however, scope for encouraging voluntary military training on a large scale. The tremendous emotional upsurge for national defence in the wake of the Chinese aggression, could be fruitfully harnessed through voluntary military training. It would give the people a sense of participation in national defence. This training need not carry any commitment for military service. Its primary aim should be to promote discipline, integration and military understanding among our people. These are all important factors in fortifying the home front in the event of a shooting war. It can also provide the administration with trained and organised manpower which can be mobilised in the event of any calamities or for work connected with national development.

Military training should be made available to almost any youth in the country desirous of it. Provision of this training on such a wide scale will break the past legacy of the isolation of the Defence Services from the people. It will assist in identifying the Services with the people and will work for the mutual benefit of both. This can be achieved without any serious drain on our limited resources. Volunteers coming forward for this training can be trained in their spare time. Retired army personnel already in receipt of pensions, with some extra remuneration can be gainfully employed for this purpose. The expenditure involved will be almost negligible and may even be partially compensated by using these personnel for development work or as insurance against calamities. It will also go a long way in solving the problem of the rehabilitation of ex-Service men who have to retire at an early age. The military hardware required need be small arms only and may be those which have become obsolete for the regular forces.

THE NATIONAL CADET CORPS

As a concession to popular demand for military training, the British had started the University Training Corps after the First World War. This organisation functioned in a restricted form at various universities in the country till 1947. Its successor, the National Cadet Corps, with a considerably enlarged scope, came into being in 1948. It catered for a much larger number of university students and also included schoolboys and girls within its purview. Following the Emergency, National Cadet Corps training was made compulsory in 1963 for all students at our universities. Every student has to do a minimum of three years with this

Corps while at the University, and thereafter, this training is optional. The number of students in this organisation has now risen to more than two millions and a half.

The aims of this organisation are as follows :

- “(a) To develop character, comradeship, the ideal of service and capacity for leadership in young men and women.
- (b) To provide Service training to young men and women so as to stimulate interest in the defence of the country.
- (c) To build up reserve of potential officers to enable the Armed Forces to expand rapidly in a national emergency.”

The order in which the above aims are listed is significant. It is not the intention that this corps should provide a second line of defence nor, indeed, to train personnel for the Services as such. Membership of this organisation carries no liability for military service. It is essentially an educational and character-building institution.

Military training provided by this corps is now part of the curriculum of every university. Students attend parades in the evenings and on holidays. They also attend annual camps which are organised for both social service and military training. Personnel from the Defence Services are seconded in fairly large numbers to this organisation. A cadre of National Cadet Corps officers drawn primarily from college professors is also being rapidly built up. This organisation should eventually be made self-sufficient by having its own personnel and by employing ex-Service men. This would eliminate the present drain on personnel from the fighting Services, who have to be diverted from their primary role of defending the frontiers.

The National Cadet Corps as at present organised, amply serves the need for providing military training to our young men and women at schools and colleges. Compulsory training in this corps at the university stage introduced in 1963, should be retained as a permanent feature in the future, even after the present Emergency is over. Although advantage was taken of the psychological conditions obtaining after the Chinese aggression to introduce this measure, its retention is recommended not to meet any defence requirements but for its other benefits like leadership training, character building, physical toughening, national integration and social service. Our late Prime Minister rightly observed in his Independence Day Message to the National Cadet Corps in 1963 : “Military training is a thing good for all young men and women. If necessary that may lead to the battlefield, but, even more important in this training is to inculcate discipline and fearlessness, capacity to co-operate in a spirit of equality and to devote ourselves to higher causes.”

The Lok Sahayak Sena

An auxiliary territorial force was started in 1950 with the aim of giving military training to the people. Later, the scope of this force was enlarged and its place was taken by the National Volunteer Force which was redesignated as the Lok Sahayak Sena. The latter was inaugurated in 1955. The aim of this Sena is not to raise a force for the defence of the country nor is it to make soldiers out of the people. Its main purpose is to inculcate a sense of discipline among the people through military training and to give them a sense of self-reliance and responsibility.

All able-bodied citizens between the age of 18 and 40 except ex-Service men and members of the National Cadet Corps, are eligible to join the Lok Sahayak Sena. It conducts training camps of 30 days duration in various parts of the country. The training staff is seconded to this force from the regular army. By December 1963 the Lok Sahayak Sena had held 1671 camps in various parts of the country and trained 7,40,284 volunteers. Although these figures are impressive it is debatable whether the results obtained have been commensurate with the efforts put in. Four weeks' training without any follow-up or continuation of association with the organisation, can hardly achieve results by way of raising the general standard of discipline. It would be better to organise the Lok Sahayak Sena on territorial basis. Units should be formed on the basis of districts. Military training may be imparted to volunteers in their spare time for a period of two to three years on the lines of the National Cadet Corps. Annual training camps should be held and due emphasis given to social service. There may also be a provision for mobilising trainees for service within the district or State, in the event of any calamities.

The Home Guards

Various States in the country have organised their own Home Guards which are an auxiliary to their civil police. Here again opportunities for military training are available. The personnel of this organisation are liable to be called up to assist the police in the maintenance of law and order. They can also be employed, when necessary, for running essential services. The necessity for having strong security forces to combat the subversive threat, has already been discussed. The association with this organisation of citizens with influence in their area will further strengthen the ability of this organisation to deal with problems connected with the maintenance of law and order.

Training in Border Areas

The need for training citizens in the border areas has also been brought out. Their military training should have a guerrilla bias, in terms

of blowing up of bridges, carrying out raids, ambushes and so on. No organisation at present exists for imparting such training. It is suggested that steps be taken in this direction. Regular army units stationed in these areas can take this on as an additional commitment or command-type territorial army units can be raised. In certain areas on the border, it may even be necessary to settle ex-Service men on generous terms so that they can provide the necessary suitable manpower for this purpose.

CONCLUSION

Due to various historical factors, our Defence Services have hitherto been secluded from our people and the latter had developed an attitude of apathy towards defence problems. The emotional upsurge in the wake of the Chinese aggression has roused them from this attitude. We should take advantage of this to inculcate military understanding and foster a sense of participation in national defence. This can be done through compulsory military service or by providing voluntary military training on a large scale.

Conscription in any form is not a practicable proposition in a country like India. There is no necessity for it in the light of our defence requirements. Moreover, our national economy just cannot afford a 60-million Armed Force or even 4 million short-term conscripts. We would be inviting economic ruination if we attempt to raise such a large force. Such an attempt would also irretrievably damage our defence potential, because our forces would be denied a proper industrial base. Conscription can hardly provide security, unless it is backed by productive capacity to arm and equip the millions of men that will be mobilised for the Services.

Voluntary military training on a large scale is essential. The aim of this training should not be to provide a second line of defence or to make soldiers out of our citizens. It should be designed to inculcate discipline, self-reliance, military understanding, integration and a sense of national service. The National Cadet Corps is now providing ample opportunity for military training to our school and college students. The organisation of the Lok Sahayak Sena, however, needs modification to provide continuity of training over a longer period. We should make special provision for the training of citizens in border areas and this should have a bias for guerrilla warfare. We should also take advantage of the trained organised manpower in these volunteer formations by employing them in national development projects or for relief during any calamities.

The military and economic threats to our national sovereignty require us to strike a careful balance between national defence and economic development. Militarily, what we need are strong, well-trained and well-equipped forces which can deter any aggression by our potential enemies. If any such aggression is launched, we should be able to contain it and make the enemy

pay dearly for his adventure, while world opinion crystalises against him. So long as the forces required for this purpose can be recruited on a voluntary basis, there is no need to resort to conscription. However, in view of current shortages, it may be necessary to introduce compulsory military service for certain classes of people like doctors and engineers. The importance of economic development in the context of the threat facing us, is no less. If we fail to generate the necessary economic growth in the country and alleviate the sufferings of our people, our defeat would be just as crippling as after a disastrous war. The threat we face today is not only to a few square miles of barren mountains or to the narrow vale of Kashmir, but to our whole way of life with its cherished ideals of democratic freedom, economic well-being and faith in secularism. To combat this all-pervading menace, we must gear all our national resources in the twin fight for national defence and economic development. The entire nation must be mobilised for this purpose and thus, bring this struggle to a successful and glorious conclusion. The "nation in arms" theory, based on the nation as a reservoir to pour its resources in the Armed Forces, must give way to the concept of "nation at war", based on a mighty river in which are merged many tributary forces, of which the Armed Forces is but one.

JOIN



**UNITED SERVICE INSTITUTION
OF INDIA**

(Founded 1870)

For the furtherance of

**INTEREST AND KNOWLEDGE IN THE ART, SCIENCE
AND LITERATURE OF THE DEFENCE SERVICES**

For the particulars write to:

**Secretary U.S.I.
KASHMIR HOUSE
KING GEORGE'S AVENUE
NEW DELHI-11**

SOME THOUGHTS ON OUR TACTICAL CONCEPTS

By Major S. C. N. JATAR

INTRODUCTION

Tactical concepts have undergone varied changes since the inception of organised warfare. As a matter of fact, after every war tactical ideas change in the light of new experience gained. "New conditions and new weapons require new and imaginative methods for solution and application. Wars are never won in the past"—MacArthur. Is it, therefore, correct to say that tactics usually walks on paper? One could go even further and ask—is it really possible to have a doctrine for tactics? Is it not normal to find that an unorthodox and bold attack succeeds better than the one planned by considering the usual three approaches—the Left, Right and the Centre? A classic example of boldness is the landing planned by MacArthur at Inchon. He violated all the amphibious 'dos and don'ts'. MacArthur said: "..... for the enemy commander will reason that no one would be so brash as to make such an attempt. We shall land at Inchon and I shall crush them!" Do we then tend to become rather doctrinaire in our approach to tactics? Are we still to remain hidebound to World War II tactical concepts?

AIM

The aim of this paper is to put forth a few ideas on our tactical concepts. A part of this article deals with the employment of reserves and training in movement. I have also dealt with such other topics as road blocks, diversionary attacks, importance of reducing casualties and employment of combat engineers. The paper is based on the conditions presently prevailing in our country. It is presumed that politically, economically and militarily, a war in which we would be involved, is not likely to last for more than a month.

RESERVES

Clausewitz's Definition

"A reserve has two objects which are very distinct from each other, namely, first, the prolongation and renewal of the combat, and secondly, for use in case of unforeseen events". Clausewitz says that there would be a strategic reserve only when unforeseen events are imaginable. Clausewitz further draws very interesting conclusions that the idea of strategic reserves begins to become inconsistent, that strategic reserves are always more superfluous, always more useless, always more dangerous, the more general their destination. The two concepts of strategic and tactical reserves tend to merge into each other—the line between

them is very thin indeed. Unforeseen events are imaginable even at the tactical level as enemy's reactions are generally known by direct contact. Hence the commander keeps a reserve with him—in this case it becomes tactical—to strengthen points which are weak or to modify dispositions of troops to correspond better to that of the enemy. Finally, "the persistent use of reserves in tactics always shifts the great result to the end of the whole act". In other words Clausewitz insists that employment must be given to all reserves (active forces available). Using reserves after the decision (strategic reserves) is opposed to commonsense. It is, therefore, necessary that there are no forces which are kept idle to be used only as strategic reserves. In many circumstances, there may not be time enough to utilise them. Hence, reserves should be used tactically. Further, if we earmark a force as a reserve we should use it as such. It is incorrect to have a reserve only to be used in case of a failure. Why not use it equally decisively to exploit success? Persistent use of reserves will pay dividends.

Normal Concept

The usual idea is to have 'something' in reserves in every operation of war. Little attention is given to the utility of this reserve. It becomes rather monotonous and routine to have one brigade or battalion attacking, part of the second brigade or battalion holding the firm base and the third in reserve. Needless to say, this works out if the attack goes according to plan and the so-called reserves are not committed. What are the repercussions if phase 1 of the attack does not go as scheduled? Surely, the reserve brigade has to be used; but then what about the remaining two phases? It will take some time before the phase 1 brigade is put together, formed up and launched again. If nothing else, time and space is bound to go awry. Have the reserves then achieved their purpose? The reserve that we have in an attack, or in any other operation of war for that matter, seems only fictional. It is to be used only when the attack has gone wrong or is about to go wrong. What force has the commander got to exploit success? At the very best the commander can launch a subsequent phase earlier or carry out a little exploitation. It is therefore necessary that some reserve force is left directly under the commander. A reserve, to be worth while, should not only be able to deny to the enemy the use of his own reserves but also be able to influence the battle as follows :

- (a) In attack, to exploit success or to reinforce a particular phase in such a manner that the original plan works out.
- (b) In defence, it should be used to evict the enemy that has penetrated the defences, without weakening its own flank or sacrificing depth.
- (c) In advance, it should be a very mobile force specially earmark-

ed to exploit success on any of the axis. This force is not to be confused with the pursuit force which would be with the higher commander.

- (d) In withdrawal, it should again be a highly mobile force capable of either extricating own forces or delaying the enemy on any axis where partial success has been gained. This force should be separate and not given another task subsequently, e.g. defence. Giving another task is to hamstring its use.

Anomaly in Current Teaching

I shall illustrate an anomaly in teaching by taking the example of a brigade in quick attack. The brigade is attacking in four phases to capture a battalion defended area of four companies. The assessment of troops to tasks will be something like this:—

Phase	Attacking battalion	Firm base battalion	Reserve battalion	Force actually used for attack (3:1 superiority)
1	A	B minus	C	A minus one coy
2	B	C/A* minus	A/C*	B minus one coy
3	C	A/B* minus	B/A*	C minus one coy
4	B	A/C* minus	C/B*	A minus one coy

* Depending on the situation.

Following disadvantages are apparent from the above table :

- There is an integral reserve within the battalion for every phase.
- The reserve battalion of every phase is to be employed in a subsequent phase.
- Circumstances may force a battalion going in for attack in a phase to be in reserve for the preceding phase.
- In case of any of the phases not succeeding, the subsequent phases will have to go without an adequate reserve. The situation is really bad if phase 1 fails.
- In order to avoid frequent moves, the choice for location of reserves is limited.
- At least one of the battalions has to be used twice.

Reinforcing A Failure

The main considerations for current method of assessment of troops to tasks is that every attack must be launched from a secure firm base with adequate reserves. In case, however, the attack does not go as planned these very considerations are required to be sacrificed.

As the attack has to be launched from a secure firm base, it may have to go without an adequate reserve in the subsequent phase. Here the idea seems to be to use the reserves only in case of failure. In an attack, time and space will go wrong in spite of committing the reserves. In effect, the aim will not have been achieved as the position would not have been cleared in a stipulated time.

Creation Of An Ad-Hoc Reserve

The problem is to overcome as many of the disadvantages given in paragraph five as possible. This can be done by giving the commander a force which is not to be committed as such in any of the phases of an operation. This is what the Germans did and the Chinese perhaps insist on. It does not seem possible unless the commander forms an ad-hoc force of approximately two coys supported by a platoon of engineers and keeps it to be used as a reserve. The platoon of engineers in terms of infantry will be two platoon strong and can be used as 'infantry', if necessary. It is incorrect to discuss on paper the feasibility or otherwise of such an arrangement. Of course, a four-battalion brigade will solve this problem. Such a force, if created, will enable a commander

- (a) to have an uncommitted reserve available to him;
- (b) to control it effectively and use it persistently throughout a phase or operation;
- (c) not only to deny to the enemy the use of his reserves but also to influence the battle effectively;
- (d) to overcome the anomaly of not having adequate troops as reserves or for securing the firm base;
- (e) to have a wide choice for the location of reserves; and
- (f) to maintain momentum and retain the initiative.

Highly Mobile Troops

A further attribute of these reserves should be that they should be highly mobile. They would be capable of influencing a battle only if they could be thrown into battle quickly and at the correct time and place. It is not necessary to change organizations or equipment to make troops mobile. The stress, as it is now, is on lighter equipment. It should be possible for troops to move swiftly if they are well trained in movement and battle drill. (More about movement in paragraphs 18 to 20 below.)

Location Of Reserves

The next point to consider is the location of reserves. The tendency is to keep reserves on the same axis as that of the attack. This tendency is beset with danger as it is not correct to have any hard and fast rules

about location of reserves. Location of reserves entirely depends on the terrain and the tactical situation. The reserves should be capable of being used effectively. Locating the reserves 'centrally' is a cliché. How many times can we find a 'central' place in the mountains from where the reserve can be switched on to any other axis? It would be better, at times, to locate the reserves on a different axis or approach so that if the attack on the first approach fails, the other can be exploited in conjunction with phase 2. The underlying idea is that the reserve should be so located that it could exploit success and NOT reinforce a failure—hence, all the more requirement for a centrally controlled reserve. Locating reserves calls for a command decision. It is, therefore, a matter of the greatest importance that the commander takes this decision after due thought. The decision has to be taken early in the battle, and will stretch his imagination and tactical foresight to the maximum. In mountainous terrain reserves once located will be difficult, perhaps impossible, to move. The decision becomes vital.

Road Blocks

Mountains are ideal for road blocks. Undeveloped road communications, jungles and high hill features with good defence potential facilitate establishment of road blocks. A road block is normally established behind the enemy while the main attack is being staged. The idea usually, however, is to block all escape routes of the enemy. As it is not really possible to block the infantry from escaping, the block is located in such a manner as to destroy heavy vehicles, equipment and artillery. A block may also be established to protect an exposed flank, to prevent reinforcement from reaching the enemy, to disrupt his lines of communications or to make the enemy change the design of his battle.

Detailed siting will invariably depend on the terrain and enemy dispositions. What is more important is the timing of the block taken in relation to its siting. It is not correct to be rigid in sending the blocking force simultaneously with phase 1 of an operation. The force should NOT block ALL the escape routes. The enemy must be given at least one route to escape so that capturing or destroying him along that escape route becomes easy. He is then channelised along a route. As the ancient Chinese Li Chuan said: "Encircling an enemy is no strategy. Let him know that an escape route is open and he will flee and disperse. Then any village constable will be able to capture him".

Diversionary Attacks

Presently a great deal of stress is being laid on the theory that forces should not be dispersed but kept concentrated so that they are used decisively and the momentum maintained. However correct and sound this theory is, it surely does not mean that all forces should be

kept concentrated whether they can be fully used in a particular operation or not. In mountainous terrain, the quantum of force that can be deployed in an attack at any one time is restricted due to lack of space and rugged terrain. It is, therefore, imperative that some force is always taken out for diversionary attacks so as to confuse the enemy and divert his attention, attack his Hq. and gun areas and generally attain surprise. As a matter of fact, the possibility of sending forces of up to battalion strength on alternative approaches in conjunction with the main attack on the enemy's vital ground (along a different approach) should always be considered. This will not only make the enemy commit his reserves indiscriminately but will also enable the capture of the objectives at less cost.

CASUALTIES

Casualties and Morale

One of the factors to consider in planning an operation should be the rate of casualties. Very often, it is this consideration that may affect the formulation of a plan. Attainment of an objective at less cost has a great morale effect on the troops. As 'morale is the biggest single battle winning factor', the rigid adherence to this consideration will have a salutary effect on the conduct of a campaign. General MacArthur was a great exponent of this factor. In every battle and campaign that he planned, this consideration of minimising casualties was never lost sight of. On restoring full powers to the Philippines, the General said: "..... but to me it seemed only the culmination of a panorama of physical and spiritual disaster. It had killed something inside me to see my men die".

Rate Of Casualties Should Be A Factor

It is a matter of regret that we find this factor being completely neglected or only lip service being paid to it specially in sand models discussions and TEWTS! To say "I am ready to write off the whole battalion" is not being brave; whatever the reasons. It is one thing to be bold and dashing and quite another to be callous and indifferent to the rate of casualties. A bold plan will have inherent in itself an element of surprise which should give protection and security to our troops and minimise casualties. Or out of two workable plans, the one costing less casualties should be more acceptable. Inchon landings once again prove this point. The traditions of fighting men are based upon the noblest of human traits—sacrifice: the men will sacrifice their lives and perhaps complete units may well be written off for want of little thought or consideration in the planning stages to the rate of casualties. The result of this callousness is bravado and then repentance. "One cannot regain the past, the fire will have become ashes"—MacArthur. Or as the Great

Sun Tzu says, "..... an angered man may again be happy, and a resentful man again be pleased; a state that has perished cannot be restored, nor can the dead brought back to life". Hence, 'casualties' should invariably be considered as a factor during planning.

COMBAT ENGINEERS

To-day the Corps of Engineers is neither purely an Arm nor a Service. Perhaps the Engineers try to be both. The reason for this state of affairs is obvious. An average sapper officer spends anything up to four years or more on courses and out of the remaining ten years, he would spend a maximum of four years with troops. Rest of his service goes on ERE, Staff, MES, DGBR and instructional appointments. Thus after 14 years of service the sapper officer is at a professional handicap both as a sound combat engineer and a good civil engineer. It is not the intention here to go into the causes and remedies; suffice it to say that the Corps of Engineers should aim to be a good arm.

The correct employment of combat engineers in any operation will tilt the balance in one's favour. The sapper has three facets—the tradesman, the field engineer and the infanteer. It is this that makes a sapper adept at improvisation. We tend to underestimate the capabilities of the sappers and do not make the maximum use of them. In the mountains, troops are always short. Maintenance of roads, specially, is not the exclusive task of the engineers. Maintenance in rear areas can very well be done by pioneers, GREF and other civilian agencies. A little technical help in the form of supervisory staff and machine operators may be required from the engineers. Utilising some of the corps and army engineers as part of commando troops is very strongly recommended. This will need special stress on military training of the Corps of Engineers. It must be remembered that the strength of an engineer company is more than a rifle company and hence part of even the divisional engineers can be used on other tasks. The following additional tasks are suggested :

- (a) In attack, to accompany the blocking and diversionary forces. Sappers can be used to increase the bayonet strength as well as to carry out field engineering tasks.
- (b) In defence, to carry out active harassing operations against enemy's lines of communication apart from holding a sizeable area of ground.

General MacArthur, himself a sapper originally, always made the maximum use of the sappers. Frazier Hunt says in 'The Untold Story of Douglas MacArthur': "The Rainbow was to be denied the privilege of hot pursuit, but MacArthur, who had always insisted that combat

engineers could serve as first-class infantrymen, saw to it that the Rainbow's 117th Engineers took part in at least the first half of the great follow-up". But all this is only possible if the sappers remain as combat engineers and not shed their weapons! Are'n't the sappers 'mad, and Methodists after all?

MOVEMENT

Considerations for Groupings

When units are grouped for operations of war, certain considerations should be adhered to. These are

- (a) A unit is given the task it is best suited for.
- (b) A unit is continually employed so as to get the maximum out of it.
- (c) A unit is employed where the enemy least expects it so as to attain surprise.
- (d) A unit is not split up beyond its basic employability.
- (e) A unit is moved the least between phases and from its parent formation.

It will be seen that the basic consideration boils down to this—that the unit should not be moved too often so that it is so positioned as to be readily available in time and space for employment. If a unit is moved too often, some of these considerations are overlooked. Clausewitz says that war is a province of uncertainty and in no other sphere of human activity has such a margin to be left for this intruder. It is also our experience that pre-planned groupings do not work in practice and at any rate large-scale movements are required to take place. This is due to lack of resources and uncertain situations. But perhaps more so due to inaptitude of commanders and planners to read the battles and foresee the events.

Teaching of Ideal Groupings is Wasteful

We find that in training, therefore, that too much stress is being laid on ideal groupings. More units are allotted on paper to achieve standard groupings and thus we are apt to get disillusioned when in practice things are not so. It is correct that given limited resources, movement of units should be reduced to the minimum. However, we should also attune our thinking to this aspect of long movements which in effect is withdrawing resources from one formation and allotting them to the other. It is time that we accept movement of units from one type of warfare to another as part of the game.

Training in Movement

It is, therefore, necessary that enough training is carried out in movement. There is no doubt that once a unit reaches its destination, it will

come up to the expectations. It is not so much the making of the bridge or providing fire support or raiding a gun area; but the problem usually is to get the unit there well in time to carry out reconnaissance and then the plan. We should train to be swift as the wind and in raiding like fire. I would go even further and say that long movements of units should be part of pre-arranged plans so as to achieve surprise. This seems contradictory but has to be so in the light of our resources and conditions.

CONCLUSION

We should not be rigid in our tactical concepts; on the other hand we must continually change our outlook to suit new conditions. Complacency will lead us nowhere. Creating reserves at brigade level for use persistently in an operation is perhaps the answer in the present circumstances. Similarly, advocating standard groupings over-simplified by allotting ample resources on paper, tends to give a false sense of security to our officers. Facts on the ground differ considerably. Hence, training in movement assumes significance. Long movements will actually help in attaining surprise, if well planned and equally well executed. Decisions regarding employment of reserves and grouping of the resources are the two most important functions of the field commander which influence the outcome of the operation. The decisions are of the commander alone and he carries the responsibility with it.

It is incorrect to block all the escape routes of the enemy by placing road blocks. He must be given an avenue to escape so that he can be destroyed at the time and place of choosing. The principle of concentration of force should not be misconstrued by keeping the entire force together without considering its utility. All troops must be employed and the possibility of sending more than one diversionary force explored, specially in the mountains. Casualties are a factor affecting morale and hence should always be considered while planning all operations. Combat engineers are useful to reinforce the lack of infantry and if correctly employed will pay great dividends.

These are some of the thoughts on our tactical concepts. These concepts may not have much value because they lack the quality of having been tried out in combat. However, an attempt has been made to put forth certain ideas which have emerged as a result of a study of different campaigns as related to our present-day conditions and teachings.

SYSTEM CONCEPT

By Group Captain P. C. SANTRA

INTRODUCTION

This article attempts a brief discussion of the fundamentals of system concept by way of an introduction and orientation to systems management. Its implementation is a much larger subject which cannot be covered here for lack of space.

System concept is the basic philosophy of system approach and systems management. It has found wide application in the defence organizations, in administration and in commerce and industry in the West.

We in the Indian Air Force have made a small beginning in experimenting with these new ideas. But it will be quite some time before these concepts find firmer ground in our defence forces. And it may be decades before these concepts gain widespread application in the country's administration, business and industry. Nevertheless, this is the most opportune moment for us to gain a deeper insight into this new concept.

WHAT THEN IS SYSTEM CONCEPT?

System

FIRSTLY, what is a system? When for instance we see a chaotic situation and say to ourselves "Let us get some system in here", what we mean is, let us get some order out of this chaos. Let us get things organized. Let us organize matters in their logical relationship to each other and their true functional relationship to the whole.

A system is an organization of manpower, material and resources operating under a set of rules and procedures to achieve a definite goal, for example, families, communities, a country's economy, defence, administration are systems.

A system is also a network of related procedures developed according to an integrated scheme for performing a major activity, for example, production planning and control system which comprises scheduling procedures, material requisitioning procedures, routing, despatching, expediting, etc.

A system is also an organization and accumulation of technical capabilities harnessed to achieve a positive goal, for example a communication system, an air defence system.

Thus we define a system as a complex unity of many, often diverse, parts subject to a common plan or serving a common purpose. The higher the system in the hierarchy of systems, the more complex is the unity of parts. How complex is this unity can be gauged from one familiar example, namely the unity of war in the defence system of a country. The unity is derived both from political and military activities. War is basically exercise of power. The elements of power are geography, natural resources, industrial capacity, military preparedness both qualitative and quantitative, manpower, national character, quality of diplomacy and quality of government. Obviously, therefore, diverse parts such as plans, programmes, personnel, equipment, armament, transportation and supplies, battles and campaigns, truces and respites, commerce and industries, leadership and genius, men, money and material have all to be unified in an integrated war machine, which is what makes the war total.

So much for system—basically a unity of parts.

CONCEPT OF TOTALITY

Now, what is a concept?

'Concept' is the way we organize our thoughts and actions about reality. In fact, it is the only way we comprehend a situation and express our understanding of it. A long enduring and popular concept has been that the whole is equal to the sum of its parts. Two and two make four. Upon this concept is based the whole of our analytical approach and our scientific methods and techniques. However, the time has come to question the validity of this. Two and two no longer make a mere four. In a dynamic, living system two and two often make five and even more. Social scientists call this phenomenon synergism, a term derived from biochemistry meaning the combined effect of two like enzymes which exceeds the sum total of the effects of each. Synergism also stands for the doctrine that the human will and the Divine Spirit are two efficient agents that cooperate in regeneration. The total is not a mere sum of its parts. The total is a regenerated whole and exceeds the sum of its parts.

The total must be conceived and seen as a whole, and not as a mere assembly of its constituent parts. The total cannot be discovered by a deeper and deeper analysis of its parts. Rather than trying to discover more and more about less and less, we ought to reverse the trend from analysis to synthesis so as to perceive the whole.

This trend no doubt has a long evolutionary history. The primitive man was a wholly integrated man. He was a law unto himself! He considered the world and his relations to his environment and his activities in their entirety. The primitive tool-making man then evolved into the

non-industrial productive man. He still retained a great deal of his integrated being, even though there was division of labour on a fairly identifiable scale. The non-industrial man remained his sole promoter, his own financier, planner, producer, operator, craftsman, designer, salesman, procurer and market researcher. Then evolves the industrial man, a product of the industrial revolution, and we find ever greater and ever speedier division of labour into ever narrower specializations. This trend continues in human society just as milleniums earlier the evolutionary trend of all life starting from the unicellular amoeba developed to the most complex beings with a high degree of division and specialization of functions of life.

A concurrent phenomenon is the enormous growth in the size and complexity of individual, corporate and state enterprises. This gigantism is reminiscent of the prehistoric mammals who grew up to be giant animals with small brains. Hence, the urgent need for control and co-ordination of the present-day giant organizations through synthesis and integration of all specialized and related functions, and their management as a meaningful and an integrated whole.

SYNTHESIS

In fact, since the middle of this century there has been phenomenal progress in reconciliation and synthesis of various disciplines, synthesis between various sciences, between science and industry, between sociology and government, and so on and so forth. It is this new trend of synthesis and integration that lends added weight to the concept of management of all related activities as system.

Here we ought to differentiate between a conventional system and an integrated system. A conventional system is like a chain which is no stronger than its weakest link because the links are in linear relationship with each other. In such a system, the linear relationship is often mistakenly organized as cause and effect relationship. That link precedes this link. Therefore, that link is the cause or this. This link follows that link. Therefore, this is the effect of that. *Post hoc ergo propter hoc*. This happened after that, therefore that caused this. It is like the self-important cockerel which crows as the sun rises and deludes itself in the belief of having dispelled darkness and caused light. Hence, in a conventional system, the chain of action and reaction is one step at a time, speed and efficiency dictated by the weakest link.

On the other hand, an integrated system is like a living organism built up of living cells into a multicellular structure held together in a myriad of multiple and complex relationships. No wonder that when a physician treats a human ailment, he does not merely treat a particular organ as such, but attempts to combat the total effect of the ailing organ

on the whole being. So also in systems management. The system must be **integrated and treated and managed as a whole.**

ORIGIN OF CONCEPT

All this may sound somewhat abstract and philosophical. But it is interesting to note that the whole idea was conceived in the minds of matter-of-fact engineers, not just an individual, but a team, none of them individually famous.

System concept originated as an integrated engineering design concept. Before and during the Second World War engineering design proceeded on conventional lines. Complex systems were so designed that they remained no more than a mere assembly of the many components. The relatively independent design of components was a characteristic of engineering design those days. It was necessary and sufficient to design components of a system so that they were operationally compatible with each other. Complete integration of components and parts into the associated hardware was not a critical design requirement. Each component was designed close to an optimum which functioned adequately for its specific mission, but the end product in which the components were installed fell short of the optimum goal.

It was the United States Air Force Ballistic Missile Project which brought about a revolution in post-war engineering design. Design and development of ballistic missiles called for a package concept. New propulsion techniques, new fuel technology, new guidance system, stabilizing equipment, armament etc. demanded integrated and unity of function in one package, complete specialization of purpose, emphasis on reliability, all that and more.

From this design concept evolved the concept of management of the missile system, which comprised not merely the missiles, but also the ground support equipment and facilities as well as material and manpower.

And from this concept has gradually evolved the weapon system concept. An aircraft is a weapon. The aircraft and all that goes with it to make it operational, when fully integrated, constitute a weapon system. This includes ground equipment, maintenance facilities, communication facilities, spares and components, fuel and armament, technicians who maintain the aircraft, pilots who fly the aircraft and a host of other things.

Again, from this weapon system concept has evolved the concept of system management.

LOGIC OF CONCEPT

Thus the fundamental thesis of system concept is that an integration

of components into a system achieves an objective higher than sum of the performances of the constituent components. We, therefore, define system concept as rational integration of all related components and sub-systems so as to achieve the optimum goal of the super-system.

The fundamental logic of this is not foreign to us. We are taught fairly early in our career the organizational aspects of the components, sub-systems and systems which together constitute the defence system. In the world of ideas we learn of the hierarchical relationship of tactics, strategy and grand strategy.

A war consists of battles and campaigns. A battle is an individual military engagement. Several such engagements constitute a campaign and one or more campaigns constitute a war. Tactics concerns the conduct of an individual engagement or operation. Strategy is the use of a combination of separate but related operations to attain the goal of a campaign of war. And higher direction of war is grand strategy. In the context of system concept, we may say that grand strategy is concerned with the management of the super-system, within which strategy is concerned with constituent systems, which are in turn comprised of sub-systems that are managed at the tactical level. These three levels of management are not peculiar to war alone. In fact, in all human affairs, activities and organizations, if at all they are to be meaningful, we must adopt an overall strategy and then choose the right tactics. It is at the strategic level that system management pays off most. At the same time, We ought to remember that higher or central management is not synonymous with systems management.

WHERE TO START?

The question then is, having understood the basic concept, how does one set out to install systems management. The answer prima facie is simple: choose a system and then manage it as a whole! An obvious over-simplification. And yet it would not be difficult to cite instances where this is precisely what has been attempted. The result is hasty improvisation and lack of objectivity and orientation and consequent rejection of the system by those outside.

In order to avoid such pitfalls, we must be wary of a hasty decision to set up a new system. A long chain of events must precede such a decision, the relatively important ones being system study, that is system analysis and system design. But the fact of the matter is that no system can be subjected to system analysis and redesign unless the decision maker, the top management, so wishes. So, where ought one to start? Before we answer that question, it would be helpful to recognize the characteristics of a system.

A system has certain characteristics. It can be perceived as a whole. It is made up of sub-systems and is itself a part of a super-system. There is thus a hierarchy of systems. Boundaries between sub-systems, systems and super-systems are not and need not be minutely demarcated or defined. A system receives and loses sub-systems which accounts for its flexibility. A system processes an input to create an output. A system must adapt to change to grow and live. And finally no system can survive a world of rapid change unless it pursues a valid objective. The one last mentioned is the most important characteristic of a system, and hence that is our starting-point in system approach and system management. Here the analogy of war is helpful. In the conduct of warfare we are guided by the principles of war. The master principle is selection and maintenance of aim. The aim of war must be clearly defined and promulgated to all concerned. From this are derived the aim of a campaign and the aim of every operation. Thus the process of definition of aims and objectives commences at the level of grand strategy. Likewise, in an organization, big or small, our starting-point is at the highest level, namely the super-system, in our case the defence system. Obviously, therefore, system study must begin at the highest level. Thereafter or simultaneously, if possible, the constituent systems and sub-systems must in their turn be studied, analysed, redesigned and managed as systems.

OBJECTIVE

The system analyst, having chosen or having been assigned the area of study, proceeds to gather facts, first and foremost the facts necessary to define the overall objective of the organization or the system. It goes without saying that in order to discover and define the aim and objective, the organization in its entirety must be analysed and studied as a system.

Business and industry functioning in a competitive economy are keenly aware of all this. Many industries in the West have innovated the institution of corporate planner, ranking, in many cases, as the Vice-President of the company. His basic job is to answer the question: "What is this business all about?". Corporate planners like to argue that if buggy and coach manufacturers had visualized early in this century that they were in the transportation business and not just wood working business, then they might well have been the automobile manufacturers today. They practically went out of business because they did not clearly visualize their role in providing one of the basic needs of society, namely transportation.

Obviously, the discovery and definition of the objective is of paramount importance to the continuity of an organization. Only then the organization becomes goal-oriented without which it is im-

possible to imbibe a sense of mission in the organization. This is evident in the history and evolution of all organizations. The dominant characteristic of an organization is its purposiveness. The initiators and founders of an organization zestfully and enthusiastically dedicate themselves to the corporate aim. But as the organization grows, the constituent parts tend to function in self-contained often water-tight compartments and begin to lose identity of purpose with the organization. According to Northcote Parkinson organizations grow more stupid as the years go by because the boss does not recruit, select and promote people only to be outsmarted by them! That may be an exceptional or even a plausible reason. But the primary cause of decline and decay is lack of orientation towards a goal. Such a situation can be retrieved through system management--through reorientation of the constituent parts of an organization to the overall objective and their management as a coherent whole. Within the overall objective of the organization or the super-system, the objective of the constituent systems and sub-systems need then be defined.

METHODOLOGY

Definition of the objective is the first stage in the sequence of planning and execution of a system study project. Then follow the other stages of gathering facts on organization and personnel, policies and procedures, communicator and reporting system, work flow, costs and effectiveness, and qualitative and quantitative data. Based on these facts, rational policies are developed. This statement of policy is the most crucial factor, since all methods and procedures are governed by the policy of the organization. Needless to emphasise that there can be several policies leading to the same objective, and the methods and procedures adopted to achieve an objective, and consequently the organizational structure, will vary accordingly as the governing policies vary. Thus, having restated the policy, a logical and workable organization is rebuilt, authority and responsibility are reallocated, comprehensive approach and plan of action are formulated, rules and procedures are revised, and positive means of control through performance measurement are established and maintained. That in short is the methodology of system study.

ANALYTICAL TECHNIQUE

System study follows the methods of science. It entails analysis and design of procedures, methods and system. A procedure which is a sequence of operations is the concern of administrative analysis or work study. A method which is the means of performing an operation is likewise the concern of either work study or administrative analysis. Certain

peculiar situations may call for application of other analytical techniques. A queuing problem or a reallocation problem may require application of linear programming and operational research. Review and evaluation of a programme or project may call for application of PERT. (Programme Evaluation and Review Technique). Thus analysis and design of a system, which is a network of related procedures and methods, involves all known and available analytical techniques, including the analytical technique best known to us, namely, Appreciations and Staff Papers.

The chart on the next page shows a comparison of the methods of science with the salient steps of the other analytical techniques. System study uses them all depending upon the level of study and the area and depth of study. Consequently, the organization and function of a system study group are not to be confined to the limits of an Administrative or Procedure Analysis, Organization and Methods or Work Study. Its function encompasses all activities and techniques concerned with analysis and design of procedures, methods and systems.

HURDLES AND BARRIERS

Now, installation of systems management is possible only if the right atmosphere has been created. And this is possible only if the authorities are determined to clear the deck of the many hurdles and barriers to system management.

* These barriers are erected by one's mental approach to an organization. These are :

- (a) Tendency to classify the problems and tasks of an organization as specialized functions alone, that is to say, the means, thus leading to departmentalization.
- (b) Tendency to pursue technical improvement of the means rather than the ultimate end, thus leading to over-specialization.
- (c) Tendency to overemphasize the rights, obligations and techniques of each functional role, thus leading to over-centralization.
- (d) Translation of rights and obligations into responsibilities of a functionary, thus creating the conflict between centralization and decentralization.
- (e) Hierarchical method of control, authority and communication, thus accentuating centralization of authority.
- (f) Reinforcement of the hierarchical structure by locating all information or intelligence, strategic and tactical, exclusively at the top, that is to say, over-centralization of the decision-making process.
- (g) Vertical tendency of interaction between members and units

COMPARISON OF ANALYTICAL TECHNIQUES*

Scientific Method	Service Appreciations	Work Study	Operations Research	Administrative Analysis (O & M)
Definition of problem	Review of the situation and aim to be attained	Select	Formulation of problem	Planning scope and level of study
Observations	Factors and enemy courses of action	Record	Construction of mathematical model	Collection of information and data
Analysis of data	(or favourable and unfavourable factors)	Examine		Analysis and interpretation of data
Formulation of hypothesis	Courses open to us	Develop	Derive solution from model	Development of solution
Experiments to test hypothesis			Test model, establish controls	
Accept/modify/reject hypothesis	Selection of best course		Establish controls over solutions	Reports and recommendations
Formulate general law	Plans of action	Instal and maintain	Put solution to work	Instal and follow up

* This is a modified version of the chart on page 74 of B.L.G. Hart's Dynamic System Design.

of the organization, the predominant relationship being the superior-subordinate relationship, leading to over-centralization of command.

- (h) Motivating an organization solely through the command and direction of the man at the top.
- (j) Insistence on loyalty to the branch department, rather than the organization as a whole, as the sole criterion for membership.
- (k) Greater importance and prestige to specialized knowledge than to general knowledge of the functionaries.

* To add to all these are the barriers erected by certain attitudes of mind which can broadly be expressed as follows:—

- (a) Tendency to view the mass problem as an overwhelming situation without comprehending the contributory factors.
- (b) Tendency to be overcritical of all existing systems and methods.
- (c) Tendency to neglect historical performance and historical analysis.
- (d) Tendency to analyse problems on an academic basis with restricted number of variables.
- (e) Tendency to assume that the answer lies in concentrating development on one facet of the situation.
- (f) Tendency to consider new methods without regard to the problems arising out of new procedures and new equipment.
- (g) Tendency to permit fear of criticism to impede and stifle progress.
- (h) Tendency to assume overriding considerations for safety and reliability.

BENEFITS

In redesigning a system or in evolving a new system, the management aims to achieve the following benefits from the new system :

- (a) Reduction in cost and/or increase in effectiveness.
- (b) Increased effectiveness of policy execution.
- (c) Increased effectiveness of the functionaries.
- (d) Flexibility and adaptability to change.
- (e) Job satisfaction through rearrangement and rationalization of work.
- (f) Development of team work.
- (g) Improvement of morale.

This is achieved by importing into the new system the following characteristics of organic form and integrated structure:

- (a) Orientation of the system towards the ultimate objective, ignoring intermediate functional outputs.
- (b) True integration of activities, along the lines of information flow, vertically through productive functions.
- (c) Linking together of all information processes in a network.
- (d) Assignment of responsibility and individual tasks set by the total situation.
- (e) Adjustment and redefinition of individual tasks through interaction with each other.
- (f) Spread of commitment of the organization beyond the constraints of technical definition of the functionaries.
- (g) A network structure of control and authority instead of a vertical structure of command and control.
- (h) Lateral rather than vertical communications between different ranks.
- (i) More of consultation than command.
- (k) Content of communication more in the nature of information and advice than instruction and decision.
- (l) Problems not posted upward, downward or sideways as someone else's responsibility.
- (m) Contributory nature of specialized knowledge to the common task.
- (n) Management through the technique of exception wherein compliance with performance standards is routine and non-compliance is treated as an exception requiring decision and action.
- (o) Commitment to goal and technological and professional ethics valued more than mere loyalty and obedience.
- (p) Omniscience no longer attributable solely to the head of the organization.

ULTIMATE AIM

All these characteristics would indicate that the ultimate aim in system design is to achieve that extent and degree of true integration which nature has already achieved in her dynamic living system such as the human body. That is the true ideal of organic form and integrated structure. Attainment of this ideal is being made increasingly possible through modern tools and techniques of management. A few of these tools and techniques deserve special mention. First and foremost is the newly developed science of cybernetics, that is the science of control and communication processes of living beings and machines. Mathematical and

statistical tools such as linear programming, operations research and PERT have aided the integrated concept of management. A great deal of progress has also been made in system approach to information and data processing which are the raw materials of decision-making. Electronic computers, by making possible integrated data processing, have helped in breaking down the barriers of departmentalization, fragmentation and overspecialization of functions, which has in turn helped the management to view the entire organization as a system. However, for a developing country like ours wholesale computerization and automation is neither economically nor technically feasible. But it is my belief that some of the logic and sequence of electronic computation can be duplicated in a manual system of data processing and decision-making. It would admittedly be slower than electronic even mechanical computation, but it would certainly be speedier and more responsive than the existing manual systems. For example, certain Air Forces which use electro-mechanical data processing take it for granted that consumer units will continue to review their requirements periodically and raise replenishment demands on the Equipment Depots. And yet it is perfectly feasible to devise an automatic resupply system through manual or mechanical computation of data transmitted through conventional means.

I would like to cite another example from the industry to emphasise this aspect. Today an electronic computer is capable not only of integrated data processing but also decision-making and operations research. For instance, a single transaction like a customer's order creates an automatic chain reaction through sales, production scheduling, production control, material planning and control, purchasing, shipping and accounting. Simultaneously, the computer takes decisions on the effective credit range, product mix for maximum profitability, production schedule based on efficient machine loading, balanced quality control, optimum shipping and distribution pattern and other connected problems. The same process automatically generates several action documents such as stock order recommendations, bills of material, purchase orders, withdrawal notices, operators, instructions, programmed tapes to run and control automatic numerically controlled machines, shipping orders, invoices etc.

The question is, can the logic and sequence of these electronic operations be duplicated in a manual or mental system? Admittedly no study has ever been conducted on this aspect, particularly because it is *prima facie* a retrograde measure. But we in this country may be forced to study this problem, firstly, because we cannot afford the luxury of automation, secondly, there is no shortage of comparatively cheap labour and, thirdly, we have to find employment for our growing millions. If one were to study this problem deeply enough, one would in all probability find

that it is possible to use most of the mathematical and statistical tools of management in a manual system; it would also be possible to duplicate in a manual system some of the logic and sequence of electronic computation. Such a system would be effective enough for our present conditions and reasonably economical. And we can achieve this only if we succeed in breaking down the barriers of departmentalization, overspecialization and over-centralization. The primary need today is large-scale decentralization of authority and close integration of functions, which is the basic theme of system concept.

CONCLUSION

In this article I have drawn a mere outline of system concept, admittedly a sketchy outline. More than that was not possible. This has been like a sales talk on photography which extols the virtues of photography as a hobby and a profession but does not tell you how exactly to handle a camera. But once we are sold to the idea of system management and possess the mental equipment for it, the next step of acquainting ourselves with the methodology of system management is a fairly easy one, because there are standard books on system engineering, system analysis and system design.

My purpose here was to discuss the basic philosophy of system management, which is system concept itself. This is the first and the essential step for a deeper insight into systems management. Just as we cannot operate an Air Force without understanding the philosophy of Air power, much less can we manage any system without appreciating the basic philosophy of system management.

We as individuals belong to systems, in fact to several systems at the same time. It would not be altogether untrue to say that there is room enough even for the non-conformist and the heretic in one system or another, provided that they are sufficiently patient, persuasive and well-mannered and not impulsive and arrogant. One does not lose one's individuality or specialization by integration into a system. I do not for a moment underestimate or underrate the individual's contribution to progress. But the fact of the matter is that howsoever brilliant the individuals may be, however efficient may be the components of the system, the overall performance of the whole system is governed by the environment. It is my belief that the right environment is created by efficient system management, which makes the system goal-oriented, which imparts a purposefulness even to routine day-to-day activities. As mentioned earlier, this is more apparent in a small organization. This is what we know as the squadron spirit—a sense of identity with the squadron's mission. This is the fundamental logic of weapon system concept which gives a sense of identity with the mission of the weapon. This is the right

(Contd. on page 154)

EDUCATION FOR SELF-RELIANCE

By BRAHM P. GUPTA

THE supremacy of the learning-on-the-job philosophy has given was to a recognition of the fact that there are certain aspects of training which can be dealt with most effectively through a formal institutionalised course of instruction. The problem of motivation in training assumes major importance where the training, because it has been institutionalised, appears to be somewhat removed from the practical day-to-day problems of the work for which the training is being imparted.

The concept of school education in India has been revolutionised to keep pace with the advance of modern science and technology, with special emphasis on the development of a skilled, competent and fully developed personality, on the growth of a personality which is useful and whose usefulness is relevant to the social and economic progress of the country. The task is enormous, but the challenge has been accepted and is being met according to a phased and balanced programme. The Education Commission has given fresh directions for a fully equipped comprehensive education to be most effective and purposeful.

However, a challenge bigger and more urgent has posed itself. It has come up despite our best intentions and efforts to march towards a solid national prosperity and international harmony. In keeping with our honest and peaceful aspirations, our energies have been directed mainly to the socio-economic development of the country. And no doubt a strong base for a self-sustaining growth has been laid. But circumstances have compelled us to think again and to reshape our policies and programmes so as to achieve self-sufficiency not only in food and other needs of industry and defence, but in all fields of thinking and action. A crash programme of increased food production and steps to increase self-sufficiency in industrial output and defence requirements are under way. Defence orientation has, however, to be much wider and more broad-based, and should cover all productive and inventive talent to meet the everyday needs and situations from within. Besides agriculture and industry, the greatest need today is to develop the human capital of the nation with the highest standards of character and productivity.

THE CONCEPT OF SELF-RELIANCE

The technological developments and scientific discoveries of the century have completely revolutionised the techniques of warfare. In sharp contrast to the ancient wars fought only on the battlefield between the warring armies, the invention and application of new and newer weapons and machinery, of the ground, air and the sea, have brought

the war to the door of every citizen, and that too not only of the opponents but also of other countries. The magnitude and variety of the responsibility of the civilian is too obvious in this context. The civilian soldier has not only to take shelter from air-raids and organise relief and rescue operations but, more important, he has to take adequate precautions in all spheres of activity against sabotage, lowering of public morale by false rumours, law and order situation, internal strifes, and such other efforts as may help the enemy. He has to help step up the production of agricultural and industrial products and defence equipments, by his devotion to duty, hard work and sacrifice. The maintenance of the supply line in the civilian sector and public confidence in the efficient conduct of the war effort on the front as well as at home has come to be regarded as the greatest value in modern warfare, the absence of which may lead to disorder and chaos in the political, social or economic field, or in all of them.

The realisation of this responsibility and its proper discharge have to be impressed upon those among us whom we call children today and who will be called upon to meet the situations and challenges, which may be even sharper and graver, in their lifetime. The growing human capital of the country, which has to take up tomorrow's leadership, will have to grow with an inner urge to be responsible citizens, reliable soldiers of peace, on the front and at home and abroad, and resolute nationals, trained in the tasks of development and defence, economic and civil.

The spirit and earnest for this character of self-reliance cannot be better infused into the people than by breeding it into the minds and souls of the generation that is coming up—that is those now in our secondary schools. The training of our youth must be geared to the new requirements of accelerated expansion in agriculture and industry, with an even greater emphasis on the development of character and a spirit of discipline. The spirit of self-reliance has to be thought of and ingrained in the youth, as Prime Minister Lal Bahadur Shastri had urged, as 'an attitude of mind' and not as an extraneous training or teaching.

CHARACTER AND DISCIPLINE

'The destiny of India is being shaped in her classrooms', says the Education Commission. It is the duty of all of us to define this 'destiny' as the end appointed by us for our own progress within our own perspective, and not as an inevitable end or outcome forced on us by circumstances. The country has shown by its solidarity, by its integrity, by its character and by its acquittance, that no challenge can be equal to its strength and capacity to march forward still in the direction of peace and prosperity. The people, that is the present generation of citizens,

have shown their deep convictions in democratic principles and harmonious growth in the world community. It is now for the school to fulfil its obligation to come up to meet this urgent and onerous, but obligatory and imperative, call of the nation—to prepare the citizens of the 'morrow who will be fully, and still better, equipped to maintain national integrity, international respect, and the universal urge to advance, to continue the gigantic task of proving to the world that truth and reason must prevail, come what may.

The teaching-learning techniques need vital and urgent reorientation to suit the present mood of the nation for ensuring for posterity a hopeful future—with self-sufficient economy, self-generating social and political growth, and self-confident defence. The end and aim of all education being to develop an integrated personality in the student, his mind should be so trained that it is kept active and always free from tensions. An active body, healthy mind and disciplined manners are the essential ingredients for training in general education and in habits of discipline.

TRAINING IN GENERAL EDUCATION

The curriculum of social education has to be so shaped as to bring forth the difficulties faced in achieving independence, the importance of preserving it, the contribution each citizen is expected to make towards national integration and building up a socialistic pattern of society. The citizen of tomorrow should not be allowed to fail in his duty only for lack of knowledge or understanding today.

National feelings and sentiments have risen in high tide in the face of common danger. These have to be consolidated so that they are not only a response to aggression, but also to the constructive tasks through which the nation's strength is to be built up. The students, for this purpose, should grow with a spirit of dedication; they should grow with a realisation that preparing to serve the nation is not a sacrifice but a privilege. All activities, thoughts and ideas have to be directed by a constant awareness, consideration, active search for what the country needs and what can be done to fulfil it. This calls for a clear understanding of the historical past and the present—the beliefs, aspirations, objectives, needs, obstacles, difficulties, and for cultivating the mental attitudes suited to it. Critical thinking and creative work, as distinct from criticism and productivity, have to be developed as traits of habit, in accepting leadership, in willingness to work, and in doing one's best in a cooperative endeavour.

The study of Social Studies has assumed, in this context, the character of a programme which is both essential as well as urgent, to be combined with their discipline—science, commerce, humanities, technical, vocational, professional, and others. It will imbibe in the students

democracy as a faith, as a way of life, with an appreciation of the cultural values and the tenets of our ideology. It will make them aware of the unity in diversity, that is India, and infuse into them a spirit to apply the principle to international relations. They will learn from it the contribution of different parts of the country to national resources and wealth, organisation of the national resources for defence and production, development of the human capital through education for optimum production and defence.

Correct information is the basis for all positive thinking and effective action. A general education of the causes of conflicts, methods and equipments of modern warfare, strategies of the cold war and their impact on the national and international affairs, implications of the measures of defence and civil defence in the context of developments in agriculture, trade, commerce, industry, scientific knowledge, form of administration, is not only imperative but urgent, too, to prepare a citizenry capable of upholding its principles of peace and progress. The people in general and the students in particular are not aware precisely of all these and other aspects of knowledge, and questioning minds, if not satisfied with correct information, will feed on rumours.

Rumour Fighting is, in fact as much and as strong a weapon of defence today. By an enlarged knowledge of geography and an enlightened interpretation, through it, of the situations and happenings on the battlefield in times of physical conflict, and of cold war propaganda otherwise, the citizen can check false rumours and impress the necessity to believe only the authentic news and to thwart any attempts to lower the peoples' morale. An educated citizen can thus be expected to boost up the morale of the people, and keep it high, to lend support to the defence ranks on the front, and to political decisions and economic endeavours within.

The study of geography which seems to have been neglected so far has become not only necessary but urgent too, to acquaint the student with the international borders of the country, the strategic points amenable to intervention by any thoughtless or unmindful regime(s), climatic and other conditions of the places situated along these borders, as also the national resources available or being developed there or near them. The borders of India are highly strategic and vulnerable. Eight out of the seventeen States of the Union have highly vulnerable borders with China or Pakistan. All these border territories except one have been breached by one or the other, causing heavy damage through loss of territory (Kashmir), dispute over territory (Gujarat), continuous threat (Assam), serious inroads into the economies of the States (Jammu & Kashmir, Punjab, West Bengal, Assam), displacement of populations; and all States carry in some measure or other the hangover

of a run-down morale. The apprehensions and fears in the minds of the people must be allayed, and a basic confidence created among them, through the dissemination of correct information.

The school has a special responsibility in making possible the collection and dissemination of correct information, discrimination between facts and rumours, dangers of spreading rumours, need for working together cooperatively for the common effort, individual and social malpractices like profiteering, hoarding, etc., and presentation of a proper perspective. Geography, history, civics and politics, arts and sciences, have all to be integrated in a comprehensive and phased programme of social education.

TRAINING IN HABITS OF DISCIPLINE

Physical culture, sports and N.C.C. are absolutely necessary for inculcating discipline in the students. The scope of this physical exercise can be expanded to inculcate habits which are at once conducive to the growth of a disciplined personality as well as to infuse an urge to take up civil defence responsibilities readily and effectively. Small and simple programmes, which may have far-reaching effects, sometimes go by neglect or default only because of their smallness or simplicity or otherwise. But they cannot be ignored, especially in the present circumstances and can be taken up for immediate implementation without involving too much of an extra expenditure or effort.

Involving the students in keeping classrooms and school premises neat and tidy will be helpful in practical lessons on health education and in breeding healthy and clean habits among them. Particular attention should be paid to their health problems, and special care has to be taken to ensure that they develop correct postures, in sitting, standing, moving, reading, or for that matter doing anything. Physical training programmes can be organised in the school and outside with emphasis on group activity.

The need for creating a 'road sense' among the students has been fairly widely felt, and a programme of road safety education in schools awaits execution. Besides making them safety-conscious for the roads, the kerb drill and training in road safety procedures and practices can be extended from the conventional limitations to traffic control and other areas of physical discipline. This will be helpful in preparing a citizenry capable of looking after its own traffic, watch and ward, routine law and order and security requirements, thus relieving the regular police and security forces to take up their more important assignments imposed by any emergency.

Similarly, an intensive training in first aid and nursing imparted now in the schools can be reasonably expected, apart from making the

citizens more confident, to make its useful contribution in an emergency. The citizens can then manage their own first aid and light medical posts, and the medical personnel can be spared to doctor and nurse those who need their services more imperatively and urgently.

Air-raid precautions, including fire-fighting and rescue work, can be usefully taught and demonstrated at the school. By constant practice, it would so perfect the mind and the body that the response to any crisis or challenge in the future would be quick, automatic and systematic.

Physical readiness will also stimulate mental readiness, which is at once useful to civil defence as well as to the normal development of the personality for healthy growth of the students and for effective contribution to the nation.

An alert mind and active body can certainly be expected to be vigilant, not panicky; responsive, not pensive; activated, not animated; well prepared for not only civil defence, but, if need be, for active defence too.

(Contd. from page 148)

cure for the prevalent anonymity and loss of identity of individuals in the gigantism of an organization and for the undeserved feeling that an individual is a mere cog in a wheel.

We should have no hesitation, therefore, in giving our whole-hearted support to the proposition that through system concept and system approach it is possible to manage a system so that an input of two and two creates an output of five and even more. This is our only substitute for a poorly managed system where two and two make three or even less.

Finally, system concept, to my way of thinking, represents man's continual striving towards understanding the whole, the purpose of it all, so as to achieve synthesis with the purpose of life and to attain unity of purpose with the ultimate.

Suggested Reading:—

OPTNER, S. L. — System Analysis for Business Management.

NEUSCHEL, Richard F. — Management by System.

HART, B. L. J. — Dynamic System Design.

JOHNSON RA, KAST F. E. ROSENZWIEG, JE, — Theory and Management of Systems.

TRIBAL TACTICS

By Major V. K. ANAND

In this article, an attempt has been made to narrate briefly the mechanics and the machinery of the Naga way of fighting. This study would perhaps induce many to think of the changes required in our own organisation, training and equipment to deal effectively with the so often posed challenge of the guerrilla.

TACTICS 85 YEARS AGO

WE go back by about 85 years and peep stealthily through the impenetrable bamboo curtain into the hill-top villages of Naga Hills separated physically by the deep valleys and spiritually by the god of vengeance and vendetta.

The day was 13th October, 1879. Mr. Damant, the then Deputy Commissioner of Naga Hills district, with an escort party of eighty-seven men was just on the outskirts of village Khonoma when he was fired upon and betaken by mortality. Only fifty men lived to bring the ghastly news to Kohima—the headquarters of the district.

The inadequately strengthened post at Kohima consisted of two incomplete stockades which were formed by weak and dilapidated palisading without any earthworks. Almost on all sides there was a lush vegetation and undulating ground to provide sufficient camouflage and unrestricted covered approach for the attacker. Another inherent drawback of the post was the innumerable thatched buildings which could not have escaped the burning missiles of the attackers. In addition to the post being badly situated, poorly fortified and meagrely supplied, as the report states, a number of children, women and non-combatants further reduced the efficiency of an advanced military post by their hibernation.

The garrison being only 158 strong, it was decided by Captain Reid to defend only the eastern stockade and therefore after shifting all stores and ammunition to this stockade, the western stockade was almost destroyed. Within the short time available all possible improvements were carried out.

It was on 16th October that the first advancing parties of Naga warriors were seen. The long aqueduct bringing water had been cut off and water could only be collected from the springs under cover of fire. Though the soldiers had rations for a month, the civilian complement possessed only a few maunds of rice.

On 19th October, under the able guidance of Mr. Hinde a 65-man strong reinforcement arrived at Kohima after forced marching through hostile country for about three days.

Anyway, the meagrely reinforced post living on quarter rations and dirty water made ready to put up resistance against an estimated 6000 besieging Nagas out of whom at least 500 had fire-arms. Along with the well-directed fire came a series of burning rags with missiles, and constant vigil had to be kept to protect the thatched roofs from catching fire. The warriors applied the tactics of rolling logs and boulders and moving under their cover and firing whenever a head popped up from within the stockade.

In spite of constant firing and warriors advancing, the garrison kept on repairing the earthworks and throwing barricades wherever needed till the morning of 24th October when the Nagas were as near the stockade as 40 yards and the effective working strength of the garrison had been reduced to only about 50 men.

Soon the news regarding the arrival of reinforcement started spreading and on 26th October after covering about 100 miles of inhospitable country in only eight days a 2000-strong contingent from Manipur started pouring in, scaring the bewildered warriors to disappear into their villages. This was the end of the siege but the offenders had yet to be dealt with.

Brigadier-General Nation was to command the expedition which in addition to the 2000 rifles under Lt-Col. Johnstone was supplemented by 1135 all ranks and 200 military police.

A detachment sent to Sachima found the village deserted but no sooner the entry was made when the Nagas swarmed from all around and it was only the reinforcement's arrival that extricated the detachment from the situation.

Sephima another village was captured in the mean time. The main body, then started preparation for the attack on Khonoma the stronghold of the warriors. This village located on the crest of a spur jutted out from the general ground level. The steep slope and the thick vegetation deprived any attacker of the flank approach.

It is interesting to consider this case. The defences consisted of a series of terrace fields which gradually diminishing in extent went up to the top. The stockades around these fields were bullet-proof and loop-holed and the parapets below them had been strengthened with boulders with the result that each terrace by itself was a defensive position and its occupation after severe fighting resulted in the control of a limited

area only. Around the stockade jungles had been cleared and the area infested with punjis and entanglements. The fighting shifted from the lower fields to the correspondingly higher ones with the attackers at the same time getting some advantage from the parapets around the scraps.

The Nagas in this particular case had destroyed about 75 per cent of the houses to secure advantageous entrenchments.

Nevertheless the brave Gurkhas succeeded after about 24 hours of nerve-racking engagements in making the Naga defenders retreat towards Japvo mountain after having lost about hundred bodies in the day-long combat.

This brief narration of a portion of the expedition will give the reader a cursory view of what was happening in this corner of India a little later than a century ago.

HILL-TOP VILLAGES

But the resistance against the British was not the only feature contributing solely to the bloodshed in that region. The way the resistance was put up is itself a measure of the military preparedness and the brave life of the local Nagas. The factors that guided the selection of a village site, their machinery of war with their flawless organisation, weapons of war in defence and attack and the cunning tactics incorporating the dictates of the local terrain and climate revealed further the rich treasure of military knowledge that the Nagas possessed.

The location of villages on the hill-tops gave the Nagas added advantage over their adversaries.

The losers in the plains often took shelter in the hills either to get away from the din of battle or to have a breathing-space to reorganise for a counter-attack; the counter-attack not being feasible or successful, they reconciled to stay to make the hills as their homes.

The weather in the lower tracts being always conducive to the generation of mosquitoes, leeches and many other insects, the tribals perhaps felt the tops of hills to be more hospitable. Probably the regular floods might have goaded them to stay at higher elevations.

It could also be that due to constant hunting through ages, gradual annihilation of wild animals took place in the plains and the higher tracts with unchecked animal growth became attractive for a people having liking for sport, hunting and other adventurous activities. Also due to the rainfall in the hilly regions being heavy a thick growth of jungle wood—for warming and cooking purposes and for house-building activities could be procured easily.

There being very few navigation aids and the means of communications being poor, it was quite a job for any belligerent community to track its way to the enemy positions. At the same time the attacker on the hills was at an inherent disadvantage in climbing the hills and then getting exhausted before the final assault while the defender was fresh to face the staggering enemy.

In addition to the above advantages the hill-top villages gave the defenders a good view of the entire area around. Thus observation posts could be set up and early information and fire could be brought to play effectively.

In certain cases this natural defence was supplemented by a stockade all around, which could be of tree stumps, boulders and mud. There could be series of such parapets.

COMBAT TACTICS

Even with the primitive and out-dated weapons in his armoury, the Naga warrior proved to be a versatile soldier to whom tactics were dictated by his instinct and the inherited knowledge of field and jungle craft. The Naga warriors were tough and hard and could march any distance in these rugged hills. Their implicit discipline coupled with obedience and intelligence brought them to the forefront of soldiery. They were quick in appreciation and had full understanding of the layout of the country. They fought hard not to surrender and were stubborn and determined not to disclose anything when interrogated by the captors.

Nagas were not mere nomadic warriors who fought with bows and arrows, nor did consist of a group of savage people who acted independently and attacked and looted at their own will. The Nagas had a machinery of war which could be effectively put into operation within no time. Of course, they had their own limitations.

The Nagas utilised the terrain and the geography of the land to the fullest extent. The things that would prove obstacles for any outsider were fully taken advantage of by the Nagas. The country with steep hills, rivers, valleys and dense jungle growth greatly reduced the visibility and made the communications, particularly during the widespread and prolonged monsoons, a dreadful affair. The Nagas during their inter-tribal raids moved on foot in small strength, if the distances were long, with very little loads. They fully knew the topography of the region and had an inborn sense of direction finding. At the same time the thick growth and the extremely undulating ground gave them a great advantage of natural camouflage, concealed movement and covered approach and exit.

Their method of conducting raids or attacks on enemy hamlets was always in conformity with the existing local conditions. It was a sort of

a guerrilla warfare in which the warriors manoeuvred like a cat, entered the forbidden territory like a poacher, came out from behind the bush like a panther, pounced on the enemy with the paws of a tiger and after hurriedly going through the raid, faded away probably for another encounter some distance away or at a later date. They conducted their operation with such swiftness and accuracy that there was no time left for the defender to recover or reorganise. The defenders would not know the direction in which the warriors withdrew. Even if they knew, they found obstacles in the way and thus to keep contact with them was a wild-goose chase.

While moving about, they organised themselves in a very systematic way and never could the warriors be seen beating about in a disorderly fashion or indisciplined manner. In front they always had scouts who passed back the information obtained. Then came the solid mass of fighting warriors in their war-paint (literally) followed by the helpers who carried the essential equipment, ammunitions, stores and rations.

The warriors generally refrained from fighting a pitched battle and normally acted in small numbers because of the ultimate limits in their administration and organisation, difficult terrain, long distances and lack of modern facilities. Their poor financial condition and arms of meagre fire power further limited their activities.

It will not be wrong to say that every village had its own military organisation with old weapons and equipment. During the Second World War, some of the Nagas round about the region of Kohima saw some large-scale fighting and some of them took active part in the various defence organisations. Many acted as guides for the Allies and some took part in the actual fighting. They were startled by the large-scale use of air power, artillery equipment and the engineer effort. The way the Japanese fought, left a deep impression on their minds. They learnt a good deal of the modern methods of warfare and thus supplemented their already existing military organisation.

The young Nagas were brought up in an atmosphere of Spartan discipline. They were not trained for any major war or long-drawn battle. The training was restricted to the elements and essentials which a warrior fighting in that terrain must possess. First and foremost thing was to make a Naga shed the fear of the uncertainty of topography, natural calamities, mishaps and darkness. The unknown element of nature was not, however, considered free of the supernatural and was given due reverence in all shapes and forms.

After this the coming-up boys were set on the hard task of toughening up. The boys were given individual and group tasks involving great

endurance and leadership. Along with this, continued the training in the arts of warfare which was passed on from one generation to the next. Village defence, use of weapons, ambush and raids were the sheet-anchors on which the Nagas survived, of course not without the backing of rigid discipline, spontaneous obedience, limitless endurance and faith in the goodness of the cause which was supposed to have all religious and moral sanctions.

Mobility was their greatest asset. Through their hard enduring life, the Nagas amidst the rugged surroundings learnt to befriend the multifarious and ugly postures of nature and treat these as part of life. For him to move on a narrow track up a steep hill leading to a precipice with hardly any flat portion and then coming down into a deep gorge infested with mosquitoes, leeches, snakes and other poisonous insects was as simple and casual as for us to have a round on the gaily decorated corridors of Connaught Place in New Delhi. Their requirements of clothing, food and equipment being very meagre, their weapons of war being very light and there being no transport facilities there were rarely any hitches or bottlenecks which in any appreciable way could affect their movement. In general, the Nagas were tough and hardy and had no sophisticated demand when on march or at war. There being hardly any long-drawn wars, the problem of the supplies of rations and other essential equipment rarely assumed any significance.

Naga warriors have been quite famous for suddenly appearing from a place or suddenly appearing at a time when they are least expected. Surprise and deception have been a part of their tactics. To deceive their enemy, the Nagas would suddenly pounce from behind, a bend, or a tree or from some other nook and overpower the enemy. Deception and surprise on the part of the locals won them many heads. In the early hours of a cold morning, suddenly breaking the mysterious silence of the land the warlords would emerge out of the jungle and with the craftiness and strength of a man-eater leap on the enemy. Their presence would only be known to the villagers after a few of them had been hacked and half the huts gutted with fire.

It must be stated, as is evident from the above narration, that with all the poor resources, the Naga warlord exhibited a tremendous amount of command and leadership in launching sometimes thousands of warriors into a battle. To control the various bodies of men, the Nagas very frequently employed their indigenous means of communications. The services of a runner were employed most extensively. Having been brought up by the stern hands of nature, any Naga of sound health could be sent for delivering a message. A Naga warrior could go 25 miles, deliver a message and be back the same day.

All their minor tactics further assisted the tribals in conducting their masterly ambushes. During the inter-tribal warfare an ambush was a very effective instrument. Before laying an ambush, the Nagas always ensured the tactical soundness of the plan. Generally, the areas selected reflected the wisdom of the planners. They sometimes rehearsed their ambush plans and very much cared for the escape routes and the quick execution of the job.

The ambush party was a very well-organised body. It normally consisted of about four to six batches depending upon the nature of the ground and the enemy strength. The weapons generally used in this operation were small arms, daos, bows and arrows.

Attack was an occasional burst of anger or a means of avenging an enemy who might be in the next village or hundred miles away as the crow flies. However, the attacks were coordinated and properly planned. Generally, the tribals believed in all round attacks—attacking from all four sides. Sometimes the attacks were silent but on other occasions these were noisy. They would normally cut off the water-supply and almost throw a siege round the defenders. At places they made noisy attack from one side just to deceive the defender while the real onslaught came from the other three directions.

While in defence, the Nagas never thought it wise to behave like a fanatic and fight till the last. When attacked they always tried to throw the enemy back by determined resistance but if they found that the enemy was too powerful and the final assault was inevitable, they would thin out, leaving a few men to hold the enemy at bay, inflict maximum possible casualties, deploy the enemy and thus delay him till the main body escaped to safety. These few men firing from different places gave the attacker wrong ideas about the defenders' strength. Over-estimation of the defenders' strength could result in loss of time due to deployment while under-estimation could prove very expensive in men. Thus these few men proved very effective in pinning down the attackers. Exits were generally prepared and before the attacker captured the objective, there would be hardly any defender left.

Thus, without actually defending a position they gave the impression of defence and by deploying the attacker, they found time to relieve themselves from the impending onslaught.

WEAPONS

Taller than their own bodies was the spear which was often used by the Nagas in combat. It could be used either for throwing or for thrusting. Made of wood, the spear had an iron point at the end of a sharp little blade. Varying in design, the spear could be pointed at either end.

Some of the spears that I noticed in Tuensange Division were the most colourful instruments of war. Leaving the points and a six-inch portion for holding the spear, the entire length had been muffled up in some animals hair in bands of different colours. The outline of the hair made different patterns on the many spears that I saw. It was an exquisite piece of art and the colour combination always conveyed a very high degree of aesthetic sense. Thus even through the instruments of war the Nagas gave expression to their emotional urge.

There were some chiefs who would not move out without carrying along a spear of the above description. It added to their social status and was considered to be an essential part of the dress which otherwise was just nominal.

The other weapon for use at long distance is the Naga bow and arrow. Made out of bamboo, it has many varieties, but generally the components are the same. A hardened bamboo and string are used for the bow. The arrows could be of bamboo with pointed or iron heads. At the ends the arrows are generally balanced by fixing a few leaves or feathers in the slits.

These arrows were made still more dangerous by applying some local poison at the point heads. This poison was no effective as to kill the person within 45 minutes after the arrow punctured into the body. In some cases it took many hours for the case to prove fatal. At the same time life could be saved if the arrow was pulled out quickly and the ruptured portion of the body thoroughly cleaned with water.

Nagas very often used these poisoned arrows against their enemy. Killing animals with this weapon was quite normal.

In addition to the .303" rifles, .22" rifles and 12 bore guns which were very much valued and held in great esteem, the locally manufactured muzzle loaders were quite popular in certain areas. In Tuensang Division I witnessed a Konyak killing an eagle with this weapon. But these were the weapons possessed by only a few of the warriors. Swords are also used, but not very commonly. A replacement for sword is found in the versatile dao. Amongst the Aos and all other tribes the dao is found in various shapes and sizes. The length could be anything from 18 inches to 36 inches and the width of the blade could be even more than 6 inches. Generally, the dao has a wider edge towards the head. The other end narrows down fitting into a bamboo or some other wooden handle which may be tied with goat's or some other animal's hair tainted in bright colours.

Without dao, not only warfare but also the maintenance of the household and essential services would have been a cumbersome business. With

dao a boy starts getting familiar right from his childhood. He starts using it for cutting small trees, bamboo stumps, cane sticks or for peeling off the green bark of the logs. By the time he grows up to manhood, he is proficient enough to chop off the head of a *mithun* with one stroke of dao.

The same weapon with great fondness is used for slaying the enemy on a head-hunting mission or in the role of a defender.

Some tribes like the Aos sling dao at the back through a weapon neck but many use a casing of leather which could be slung across the shoulder. In addition to the above some of the Nagas had small knives fitted to wooden handles with many carvings all over the body. Probably this was a recent acquisition.

The defensive weapons of the Nagas were, in the main, the shield and the helmet. The shields generally were of bamboo or cane work with a horizontal handle in the centre of the inner side, for holding purposes. These could be straight, concave along the centre axis or bent along the centre axis like a sloping roof on either side. A few of the shields were covered with hide for greater protection. The helmets were generally made out of cane peelings, and sometimes reinforced with bamboo pieces or cane strips. Coloured tufts of hair of various animals, bear tusks, beaks, horns and feathers of birds added to the awe-inspiring appearance of the conical caps.

OBSTACLES

Punji was an item used to impede the progress of the enemy. It consisted of a number of small bamboo spikes sticking out of the ground's surface by about 6" to 3'—a portion of length was embedded into the ground. This obstacle had a sharpened end and on many occasions the tip was hardened and poisoned. These spikes were laid all around the post or at the likely enemy approaches depending upon the local tactical situation. The tips being hardened and sharpened, the spikes were camouflaged in grass or the green shrubs which generally grew all round the Naga hutments.

This was not enough, because survival of fittest was the principle around which life revolved and any village or community that dared not to accept this conception reduced her span of existence. It was nothing odd; probably this was the then horizon of thought and nothing beyond these limits could be felt or touched. Even in our own history it was very late that the earliest prophet of peace like Gautama Buddha opened the curtain to 'life without pain'—a way of life which was to respect every other living being.

But the Nagas were quite different—both in time and ideas. Protection of the body and the village was the main concern. Certain tribes

in NEFA and Nagaland built chutes, with the help of which huge boulders could be hurled upon the approaching enemy or by pulling one string a number of poisoned arrows could be forcefully let out. Certain communities dug deep long ditches which could be covered with false platform to deceive the enemy. Inside the ditches or other natural depressions could be found a bed of punjis.

At certain places the huts had no vertical walls because of the fear that a spear hit could easily be inflicted from outside. Instead, sloping roof came down almost up to the ground level in a concave shape as this gave a little additional narrow space inside, which could be left unused for safety.

COMMUNICATIONS

The location of the Naga villages could as well be used to advantage. From the top of the hills the process of heliography was also brought into play and brief pieces of information were passed. Sometimes lights were also displayed and information passed on the basis of prearranged signals. Raising of smokes could also convey some information to one of the allied villages regarding the approaching enemy. Drum beats which could be heard up to great distance were also often used.

Over and above these means, when at close range the Nagas resorted to their bird calls and those who have heard them will agree that their exact and realistic sounds could put the birds to shame. It was only another Naga who could decode such a natural note. At the same time they had to some extent, developed another means of expression—they would engrave certain markings on the tree trunk, make a combination of a few branches of trees and leaves, scratch the ground in a particular manner and design, fix a few twigs in the fence, or employ other like means. All this meant something.

Thus, with all these invaluable and effective aids which cost nothing, the Nagas maintained a reasonable hold over the area which lay under their tribal jurisdiction.

CONCLUSION

Though poor in resources, any section of a community which adopts such tactics under similar local conditions can dominate large areas. To deal with such sections effectively, assimilation of conditions that favour the locals is essential. It is only the denial of such favourable conditions which can affect their efficiency adversely.

THE WAR IN THE DARK

By Major R. C. GHAI

ANY conventional, limited or general war holds the fearful possibility of turning into a nuclear war—a war of destruction for all. In a way this fear has greatly decreased the possibilities of war. There is, however, another course which different nations have successfully exploited since World War II to project their national objectives and ideologies without risking a global war. This is the fostering and support of insurgency movements (unconventional warfare) in the target countries.

Even if there is no certainty about the nature of a future war, be it conventional, nuclear or a combination of both, one thing is almost certain. In any future general conflict, the unconventional war or 'The War in the Dark' will be fought on a much larger scale than anything yet witnessed.

Unconventional warfare has been practised since the dawn of history. Surprisingly however though it enabled overwhelming victories against numerically and materially superior forces, it was generally relegated to a minor place in the waging of war. A neighbour and no friend of India", has in the recent past, mastered, practised and become its architect. He has made this type of warfare almost fearful to a conventional soldier, and has forced many nations to think of defensive measures. We have also to remember that no war can be won by defensive measures alone. "Set a thief to catch a thief", is a saying appropriate at this point. Hence whatever be the objective, it is necessary to understand how the unconventional force is organised.

Unconditional warfare is of a bigger magnitude than most persons conceive it to be, both in its scope and essential ingredients. It is a fusion of socio-economic, political, military and, most important, psychological ingredients into an effective national war waging machinery, in conjunction with or without regular forces. Unconventional warfare against an enemy occupying one's own territory will invariably be in conjunction with regular forces engaged in winning back the lost territory. However, any insurgency caused on ideological basis will not be operating in conjunction with conventional forces in this manner. In order to bring about final victory, it must create the conventional forces from within.

An unconventional soldier has two faces. With one he fights as a deceiver, dissembler, a killer and a predatory. With the other he wins and maintains the people's support for his cause in his area of operations as a psychological operator.

ORGANISATION

Recent history has brought out certain lessons of great importance for organising an effective unconventional force. The first out of these to my mind is "People's support". The unconventional soldier must be associated with the people, their aspirations and desires. He must be given a worthwhile cause that draws mass support and give it an appearance of mass struggle or a people's war. If the unconventional war was unsuccessful in the Philippines and Malaya, the one major reason was that it was deprived of the people's support. But it is hardly necessary to have active support by the majority of the people. Such support though good, is not essential. A small percentage of active supporters are enough provided the remainder are passively sympathetic.

The efforts and actions of small detachments must be united and coordinated at the top by a controlling machinery. It will otherwise be a disjointed and misdirected effort which will eventually disintegrate or turn into banditry. If coordinated at the top and when so required with the efforts of a regular army, it will produce excellent results as in Russia during World War II.

The third requirement is effective leadership. There is no place for a soft-footed or a soft-hearted man, leave aside such a leader in any unconventional force. Ruthlessness is necessary amongst leaders to maintain discipline, to procure supplies and even to eliminate problems of holding prisoners when these are not required. It also creates fear, panic and chaos amongst the security forces. But ruthlessness is a double-edged weapon. It can antagonise the population also and hence with ruthlessness, the leader must be an intelligent psychological operator.

An unconventional force has always been most effective in difficult mountainous or jungle terrain. Apart from the need to capture supplies and receive assistance from the local population for continued maintenance, this force will need a sponsor for a stable source of supply. A friendly neighbouring country has been proved to be most helpful as it also provides an "active sanctuary" to the force. Suitable terrain and a stable source of supply is then another requirement for organising unconventional warfare.

Lastly, haphazard arming of the civil population for waging unconventional warfare is fraught with grave problems and danger. Even the disarming of a well organised unconventional force on successful completion of its mission becomes a difficult problem. It has to be planned well in advance in order to prevent political implications and civil defence problems on achievement of the National Objective.

The first task is therefore to prepare a cause and indoctrinate the population of target area by propaganda and agents to make them

favourable to the cause. Infiltrate agents to form cells or nets in the area. From here onwards the organisation should be split into two parts : one to operate in the villages and the other to operate in cities and towns. The village cells enlist volunteers to form small teams of fanatics and general sympathisers. These teams establish base areas for training and rest. They set up communications to receive supplies from the sponsor nations. Gradually, most people in the area are associated or committed in order to give it the face of a mass movement as well as to prevent defection to enemy forces for fear of reprisals.

The teams in the villages are now ready to attack small Government security posts. The security forces if of an alien nation are annihilated. If they are from the indigenous population they either join the Unconventional Force or withdraw to safe areas in towns leaving large "free areas" for the Unconventional Force to operate from. This enables the Unconventional Force to form larger number of teams, detachments and bands. When the major units of the enemy prepare to move into the threatened area, they are harassed, ambushed and cut off from their supply lines. The Unconventional Force by now forms bigger units that can ambush and attack major units of the security forces, who in due course of time are tired into either complete annihilation or join the Unconventional Force if they are indigenous troops. The Unconventional Force thus grows and ties down very large numbers of enemy forces in its area of operations.

The organisation in towns enlists local popular and important personalities to its cause to create a proper psychological environment. It infiltrates the agencies of the administration to obtain intelligence and generally retard the war effort against the Unconventional Force. Or else the enemy government is worked upon through popular voice to adopt softer measures in the area as their own citizens are involved.

STRATEGY AND TACTICS

The grand strategy is to relate the economic and political situation and realisation of the people's aspirations to unconventional warfare. It must take the appearance of a People's War or mass struggle. The strategy is like a fight between an elephant and a tiger where the elephant is the sophisticated conventional soldier and the tiger an unconventional soldier. The elephant can easily crush the tiger under the weight of one of his feet, yet it bleeds to death by the blows of the swift-striking, light-footed tiger who eludes the elephant's weight by his fast movements. Time is of least importance to an unconventional soldier and hence with the qualities of a tiger, he converts this war into a war of attrition for the conventional soldier.

It is not intended to go into the details of tactics of unconventional

warfare. These have been written and reproduced many times over in different articles. Basically the tactics of an unconventional force are two-edged. With one, the force deals with the enemy ruthlessly and with the other it remains associated with the people of the area who must be convinced that the force is fighting on their behalf, for their good. It is like casting a net; cast it wide enough to win over the masses and draw it in to deal with the enemy. Its tactics are, therefore, related directly to the popular support it receives, and superior intelligence to escape the main blow of security forces and hit it at its most vulnerable spot. This will depend greatly on the degree of the local support available.

EMPLOYMENT AND TASK

Unconventional warfare must be waged by the natives of the country to be successful. No foreign unconventional force can earn the willing cooperation of the civil population. The most that foreigners can do is in the form of liaison officers, advisers and provision of equipment and supplies. Hence for a mission on a foreign land advance planning and organisation in complete secrecy must take place simultaneously along with psychological orientation of the target population. Unless the aim is to launch an insurgency movement, the unconventional warfare must be considered to be a war carried on by regular field forces and both operating according to a plan embracing the operations as a whole. As a rule the field forces do not fight in support of any action by unconventional force. It is the unconventional force that furthers the Army's objectives. Distance is the guiding factor on whether the co-operation can be of general nature like in retreat or of close and specific nature like in break-through.

The cooperation with field forces is achieved through coordination of activities of unconventional force at the top. There should be two separate chains of command: one for the unconventional force and the other for the regular forces. This will allow flexibility and initiative of action to the Unconventional Force. The regular forces should have direct link at lower level with any detachment of significance to enable it to make direct requests for any urgent and important mission.

Unconventional Force can accomplish a variety of tasks successfully and for some it is the most ideally suited force. It can organise the population politically and militarily to oppose some one. It can train a revolutionary force. When operating in conjunction with field forces, it can neutralise enemy forces in a particular area, indicate targets and effects of attacks and collect intelligence. It can organise and assist in escape and evasion, conduct subversion and psychological warfare.

CONCLUSION

Unconventional Warfare has become far more important now than ever before, since an all out war carries with it the fear of turning into a nuclear one. Lessons learnt from its recent applications are that for its success, it must have the people's support, suitable terrain, a stable source of supply, effective leaders and must be coordinated at the highest level. Its strategy in conduct is its association with masses and its tactics are based on superior intelligence. It can be employed independently to create an insurgency movement or be given tasks in conjunction with the operations of field forces. If it was defeated in Malaya and Philippines, it was basically due to the fact that this movement was isolated from the masses and deprived of the stable source of supply.

The individuals engaged in unconventional warfare are glorified and can be made to feel like heroes but those who take the task of defending themselves against it in regular forces die unknown. The spirit that is so easy to inculcate amongst the unconventional soldier is most difficult to achieve amongst the regular army personnel engaged in defending itself or the territory.

To elucidate the zeal with which an unconventional soldier fights, I quote the undermentioned English translation of the famous saying of Zajarchenko :

And for your life's sake 'Oh homeland'
And for that of your children,
Accept 'Oh homeland'
My cruelty this day,
For tomorrow it will be a path of tenderness".

ANIMALS IN TRANSPORT

By Major Michael F. PARRINO, USAR, (Ret.)

FOR inestimatable centuries various transport animals throughout the world have served the needs of mankind in commerce, travel and war. Even today, no part of the world can be said to be without them. Some roam in the jungles and deserts; others thrive in the mountains. Many are indigenous; some are imported. Virtually all of them were domesticated ages ago.

One of man's greatest accomplishments in history has been his mastery over such animals. In the beginning there was not that interdependence between him and the animal that we have so long accepted as a law of nature. It was only when man began to cast a speculative eye at the broad and sturdy back of an animal and conceived the striking notion that he could tame and train him to do work that such dominance over them began to be asserted. In time these animals were drafted to cultivate the fields and to cut down the forests. They were used to tote goods to the market-place and, in general, to fulfil many laborious tasks. Some even accompanied their masters into battle. As man sought further to be relieved of many of his burdens, he learned to delegate specific chores to that animal best suited to undertake them. Ultimately, there was not a sphere of human activity that did not entail, directly or indirectly, some assistance by the animal—in mining, prospecting, farming, riding, milling, merchandising, land clearance, construction, migration, communications, and many other endeavours. Those who were suited were conscripted, at one time or another, for military service. Some have served with distinction; others, without stint of glory or glamour, but extremely useful nonetheless.

These beasts of burden, as they all have come to be known, respond to a variety of services, according to their size, shape and ability. Thus, some are used for draft work; others, for pack; a few make ideal animals for riding. Some animals have been endowed with several capabilities, and very often are called on to perform more than one specialty. Where a task requires a particularly talented animal and he is not available, a lack of proficiency for the task in a substitute animal is no bar to the adaptation of such animal in order to fulfil man's immediate need.

The animals which are best known for their ready employment in transport are the camel, bullock, ox, water-buffalo, carabao, cow, yak, llama, elephant, horse, mule, donkey, reindeer, and even the dog. Each is a unique creature whose prodigious labours, undoubtedly, have contri-

buted much to man's transport convenience and comfort for many, many centuries.

THE CAMEL

Although the camel was one of the first animals to be used in transport, he has not strayed too far from his universally known habitats. He still is to be found in the land of his forbears: the double-humped camel in Asia, and the single-humped or desert camel in Arabia, Northern Africa, Egypt, Ethiopia, Somali and India. It is difficult to ascertain precisely when the camel first made his appearance. That his lineage is one of the oldest in history is attested by the many references to him in the Old Testament.

The Camel's usefulness lies in his capacity to traverse long distances on little water. Under certain conditions he is able to travel many miles, carrying from four to five hundred pounds, without replenishment. On some travels he is known to go without water for as long as ten days or more. His strength and endurance are his prime attributes. But, he lacks intelligence, shows little affection, and often displays a vile temper. He is a difficult animal to teach.

The single-humped or dromedary camel is perhaps the more prominent of the two. He is swift and can be ridden. His services as a mount for troops of the Algerian and Ethiopian Armies, for example, is widely known; whereas, the double-humped (or Bactrian) camel is more apt to be seen in the role of domestic carrier, although he also has been employed by the military, both for draft and pack. This type is better suited to withstand rigorous climatic conditions and can negotiate snow-covered mountains.

THE BULLOCK

The bullock always has been associated with transport. His value lies in his pulling ability. Possessing great strength, he is a superior animal for this chore. Although comparatively easy to manage, he is clumsy and slow.

The bullock's services are of the mundane variety. He is a familiar figure along the roads and countrysides of many nations of the world, performing myriad domestic tasks. However, he leaves much to be desired as the ideal transport animal. Employing a bullock is more often a matter of expediency than of appropriateness. For packing, he is of mediocre calibre. However, if braced with specially constructed saddles he can adapt himself readily to the task. In war, his role has been undistinguished, except for a limited usefulness in transporting supplies.

THE OX, WATER BUFFALO

In the same class as the bullock are such animals as the ox, water-buffalo or carabao, cow and yak. These members of the bovine family abound in various parts of the world, particularly in poorly developed countries where they are often the sole means of transport. However, even in the more advanced countries they are still in evidence in agricultural areas. On occasion, they also have served in the military. Like the bullock, they have been used primarily to transport supplies. An indication of their usefulness in warfare may be gleaned from the following instances: the water-buffalo is reported to be in present use by units of the Malaysian and Cambodian Armies; the carabao (or Philippine water-buffalo) was once a familiar creature during several past military campaigns in the Philippine Islands. When properly saddled for pack these animals can negotiate the steepest and roughest of mountain paths.

THE LLAMA

The llama is another animal which has been and continues to be used in transport. Found mainly in Peru and Chile, he adapts himself readily in the high, cold regions of these South American countries. This animal is sure-footed, versatile and can be easily managed. He can carry up to one hundred pounds for as long as a day. Only mature male llamas are used for transport.

THE ELEPHANT

The elephant has long served as a transport animal. There are two types, the Indian and the African. The habitat of the Indian elephant is generally all of South-East Asia; the African, on the continent for which he is named, generally in the southern and central regions. Both are strong and powerful. They are hard workers and can carry heavy loads, but are slow of movement. Despite their prodigious power they are not regarded as ideal transport animals. The Indian elephant, however, is considerably more adept in this field than his counterpart.

The tenderness of their skin invalids them easily. Despite this weakness they have been useful to various military establishments. For example, the Indian elephant has long been employed by the Indian and Pakistan Armies, as well as the British Army, to carry heavy weapons. In this capacity, they have gained an immortality, along with the famed Mountain Batteries of Kipling's time. The African elephant is best remembered in history for his march with Hannibal through the Alps of Italy.

THE HORSE

The horse has served a multitude of purposes. He is without a peer

for versatility. His back seems to have been made for a man's straddle. He is strong and can cover great distances. He can walk, trot, gallop, turn, halt, and jump at the slightest beckon of his master. He can plunge, swim rivers, and pick his way down a mountainside with more skill and courage than any other animal known. He suffers less from hardships than many of his fellow beasts.

The horse performs his transport duties in an excellent manner, either as a draft or pack animal. In the latter category he can carry loads up to 250 pounds.

It is generally believed that the horse migrated from Asia after first having been domesticated in Japan. There are many species; practically every country in the world has one or more. His military exploits are too well known to require extended comment here.

THE MULE

For supremacy in transport, the mule stands apart from any other animal. His most characteristic trait is his capacity for work. He is the ideal beast of burden.

There are many types of mules. The Punjab mule of India is one. He is sturdy and measures about twelve to thirteen and a half hands in height. Those from Iran are slightly taller. The Mexican mule is a comparatively smaller animal, but has great endurance. After extended travel he recovers faster than most other mules of his size and stature. The mule from the United States is of many species. The better known is often referred to as the "Missouri" mule. This type stands about fourteen and a half to sixteen hands, and weighs approximately 1200 pounds. He has many of the horse's features, although his face and ears are slightly larger. He bears the stamp of the horse and can trot and gallop almost as good when ridden.

There are other types—the Italian, Nicaraguan, Syrian, Chinese, Egyptian, North and South American, Spanish, Maltese, Cyprian, Abyssinian, and Cape, to name a few. In fact, he is to be found in practically every part of the world.

In the field of transportation, the mule is known as the transport animal *par excellence*. In pack work, especially, he is without a peer.

A highly intelligent animal, the mule is sure-footed and possesses great endurance. He can adapt himself to any climate or terrain condition. These capabilities make him highly valuable for domestic and military employment. In the latter respect, armies throughout history have known him as the supreme warrior. He still is.

The history of the mule is a long one, although it is not known when he first appeared. He is the hybrid offspring of the horse and donkey. He does not propagate. The several recorded exceptions to the rule, however, have not produced any descendants of value.

THE DONKEY

A few words concerning the donkey. This animal generally is found in Latin America, Africa and Asia. He is a hardy equine who thrives under the most adverse conditions of weather or terrain. As a transport animal, he continues to serve domestic needs with unheralded distinction.

The donkey is stubborn, as is well known, and often more so than his offspring, the mule. He is reputed to be a domesticated species of the African Wild Ass generally found in Ethiopia.

THE REINDEER AND DOG

Of lesser importance in the field of transport are the reindeer and dog. The former is used generally in the northern reaches of Scandinavia. This ruminant can carry loads weighing up to fifty pounds. As for the dog, a few of them are used for transport. The Arctic dog, better known as Eskimo or Husky, can be employed for draft and occasionally for pack. This animal is able to carry up to thirty five pounds. Another type is the German Shepherd. In addition to sentry duty and message carrying in the military, he oftentimes is used for limited pack work. The huge St. Bernard is renowned for his errands of assistance to travellers in the snow-covered fastnesses of the Alps. Today, in Viet Nam, Labrador dogs are being used by British-trained United States Army combat "tracker" team, to sniff out enemy positions.

CONCLUSION

The animals reviewed seem to have been created for one purpose — to serve man. All have been useful to him in one way or another. Some have excelled over others. Whatever their respective merits, one indisputable fact stands out. In the field of transportation they have rendered to man a multitude of services, without which civilization's march of progress could not have proceeded as steadily as it has.

BOOK REVIEWS

REMINISCENCES

General of the Army Douglas MacArthur,

McGraw-Hill Book Company, New York, 1964, pp. 438, Price \$6.95.

"I stand on this rostrum with a sense of deep humility and great pride.... I do not stand here as an advocate for any partisan consideration," burst General MacArthur before the U.S. Congress in a Mark Antony fashion, "I come to bury Caesar and not to praise him". The General stood before the tense Congress on 19th April, 1951 to prove that the wounds inflicted by the Truman Administration were not on the person of MacArthur but on the American nation as a whole." "It is not the dust that is settling down in Korea", he declared, "it is the American blood." The venom that he poured out was all directed towards his opponents in Truman Administration who had been in disagreement with General MacArthur on his mode of conducting the Korean war. He now expressed his conviction to the nation and with it to the coming generations in American history, that the military commanders should be left to themselves to fight a war to win rather than be subject to constant restraints by the politicians and administrators.

Before relieving MacArthur of his Supreme Command of the U.N. in the Far East on the night of 10th April, 1951 President Truman had consulted all his inner Cabinet colleagues. The then Secretary of State, Mr. Dean Acheson, cautioned the President that "if you relieve MacArthur, you will have the biggest fight of your administration." And this it turned out to be. The common man in America treated this issue as if it were an outrage on his own person, and MacArthur when he came back from Japan earned a hero's welcome, reminding one, of the scene of Paris after Napoleon's return from St. Helena. In New York city the figure of the General standing up in the back of his car dressed in trench coat and battered cap was often invisible because of the blizzard of paper which poured down from the skyscrapers. As he passed, men and women crossed themselves. When the motorcade approached its destination of City Hall the shouts rose to hysteria "... There he is.... There he is.... There he is...." The statistics of the New York City Department of Sanitation tell the story from the amount of paper collected in the streets, previously the biggest welcome had been that given to Lindberg in 1927 after his return from Paris.

LINDBERG: 1,750 tons,
MacARTHUR: 3,249 tons.

Here was a General who had received maximum that the present mode of democracy could afford to give. He had ruled Japan as an Allied Commander but the image he left behind was MacArthur's rather than that of America and far from that of the Allies.

MacArthur's 'Reminiscences' has been available in the United

States since 1964. But it seems to be quite late in reaching the newstands in India. Perhaps the book is not yet available in the market and is yet to flash the minds of scholars and intelligentsia here. These reminiscences of MacArthur were completed only a short time before his death in April, 1964 and were published posthumously. The book was aptly described by Baldwin of "New York Times" as MacArthur's ".....personal historical testament and his credo. It makes no compromises with those who worship other gods."

Memoirs are sometimes the egoistic narration of an individual's association with historical events. The events of great impact are shown through the eye of one's own judgment and assessment. The 'Reminiscences' exhaust as many as 438 pages to prove this. The book contains 10 parts and scans through the period between 1880-1964. To go through the various accounts and the General's own reactions to many political and military issues during inter-war period is a delightful experience. Appointed Supreme Commander of the Allied Forces in the Pacific, MacArthur was the architect of the campaign to drive the Japanese from their strongholds of Batan, Corregidor, and New Guinea. His association with the key personalities of World War II, like Franklin Roosevelt, Churchill, Stalin, Nimitz and Halsey, is marked with his own pronouncements. One would, however, be disappointed if one were to look for any spectacular revelations. Much material has already been thrown open in various other accounts, official or non-official, both in the United States and outside. Therefore the memoirs are not going to help a researcher much in developing any new theories for the period. Nevertheless, what remains revealed to the reader is MacArthur's rendezvous with history. His association with history during the long and eventful period shows many facets of his life through which he passed. The General screens through the early phase of his life in a rather Grand Old man's style, telling the tale of the great drama he happened to shape. The description of his military career since his start at West Point, impresses upon the reader the idea that the latter is not going through the biography of an ordinary man but that of a military prodigy and the pride of the clan of MacArthurs—General Douglas MacArthur. All through the early pages he devotes adequate attention to his father whom he considers as the main inspirer of his military career. MacArthur has developed this part of the story of his life in a highly sophisticated manner. The style is powerful, highly emotional, extremely engaging and full of persuasive arguments. MacArthur served under eight Presidents but he left deeper imprints in the history of the United States than did some of the Presidents whom he served.

The story of MacArthur becomes quite interesting after Part Seven of the book, "World War Two: Conquest of Japan". For, this period still lives in the mind of a reader not as a remote past but the events of yesterday which appear to be shaping the actions of today. Besides, from here MacArthur mounts the power as the Supreme Commander of the Allied Powers to occupy Japan—a power which he so much enjoyed in the British Viceroyalty fashion. MacArthur's sentimental and egoistic expressions run through many laudations and honours he had been conferred. Speaking of the liberation of the Philippines, and the assumption of the office of the Supreme Commander, he writes: "The felicitations, the

congratulatory messages and the honours that were now heaped upon me were too numerous to count. They gave me far too much credit", and then in his sentimental way he found the honour of being described in the coins and inscriptions of Philippines, as the "defender-liberator", "It made me weep, something I had not done since my childhood."

The last section of his book is the record of his frustrations in Korea. By now MacArthur had grown old. His vanity was at its height. Haughty by temperament and dominating in his attitude, MacArthur knew no "substitute for victory" in a war. He clashed with President Truman. In the cause of the Korean war he excelled his military genius at Inchon—when the U.N. forces were threatened to be pushed into the sea. The North Korean forces had driven them to the Pusan perimeter. MacArthur believed in the impossible. He wanted to break into the enemy from the rear. Inchon port had high tides and muddy shores. MacArthur wanted to give a surprise to the enemy by attacking the North Korean forces in Inchon against heavy odds and trying circumstances. The naval experts were not very optimistic about this plan of MacArthur. But MacArthur had his way. Ultimately the victory was MacArthur's, and he spares no efforts to make the reader get lost in the master-mind that was the General.

But the story of the Korean war is not all that MacArthur describes. MacArthur stood for complete victory in the Korean war. He wanted to bomb the 'sanctuary' of the communist forces beyond the Yalu river; and was prepared to expand the war on to the mainland of China if the situation warranted it. He wanted the Formosan troops to be used in diverting the pressure of the Chinese forces; and above all an effective coastal blockade of China. 'Fight to finish' was his aim and he desired a free hand to do so.

The Truman Administration, on the contrary, stood for a restrained war, without expanding the canvas of the war on their own initiative. The political circles in the United States had in their minds far more vital considerations of the day which the General failed to visualise. He had failed earlier to appraise the President at Wake Island conference about the possible entry of China in the Korean war. The General did not ascribe a due weight to the retaliatory action of the Russians if the U.S. was involved in a total war against the communist world. The Administration was not convinced of "risking a hazard that had such terrible possible consequences that what we would gain was not comparable to what we were risking..." It was also not considered desirable to do so in the face of alienating the support of the allies of the United States, like England and France, who were opposed to an all-out offensive against China on the mainland. George Marshall, Secretary of Defence, said in his testimony before the Senate disapproving MacArthur's plan:

"General MacArthur would have us, on our own initiative carry the conflict beyond Korea against the mainland of communist China, both from the sea and from the air. He would have us accept the risk of involvement not only in air extension of the war with Red China, but in an all-out war with the Soviet Union. He would have to do this at the expense of losing our allies and wrecking the coalition of free world. He would

have to do this even though the effect of such action might expose Western Europe to attack by the millions of Soviet troops poised in Middle and Eastern Europe". Thus the Pentagon did not feel quite confident to face such a situation in Europe while they were bogged down in the Asian battlefield. The price of Europe was much more to the United States than was the Korean peninsula or some odd parts of Asia. General Bradley, Chairman, Joint Chiefs of Staff, had clearly warned the authorities that such a strategy would involve the United States "in a wrong war, at the wrong place, at the wrong time and with the wrong enemy." Besides, MacArthur's idea of blockade of China could not have succeeded in view of an extremely non-cooperative attitude of the Asian countries, and also that of the leading European allies.

Some people find the United States in a better position, in the early 1950s, militarily due to its possession of nuclear weapons. She had a lead in the possession of atom bombs. But then they forget that the experiment of the Soviet atom bomb had already taken place in September, 1949. And this was a factor to be reckoned with if an atomic war was to be fought. The United States had bombed Japan in 1945 but it had behind her all the major Powers of Europe to effect occupation and consolidate its victory on Japan. On the other hand, the European allies, of the U.S. as said earlier, were ready to walk out of the ring at the slightest loss of their interest and security and leave "Uncle Sam" to bear the brunt in Korea.

However, the MacArthur story makes a very fascinating reading. The 'Reminiscences' conform to his political and military convictions. Like many other memoirs, they tend to be self-justificatory. It is at best a historical drama played around a single hero—he himself, with lots of admirers all along; and at worst, a stretched out story of a general reminding his nation how he served her in all odds. Its value, however, in contributing towards the solution of the historic controversy of the Korean war is doubtful and the reader finds himself from where he started.

RPK

DE GAULLE TRIUMPHANT

by Robert Aron,

(Published by Putnam, London; 1964). Pp. 360, price 35s

STRATEGY OF ACTION

by General d'Armee Andre Beaufre,

(Published by Faber & Faber Co., London; 1966). Pp. 136, price 25s.

De Gaulle's France, it seems, is breeding a new genre of soldier—the thinking type of soldier. Not that France ever lacked intellect or original thinking but it is heartening to see the Generals so assiduously propounding principles and analysing the factors that go to formulate the high

policies of any state compatible with her national aims, interests and ambitions.

It would, perhaps, be of no avail to remark that, had such principles, as advocated by General Beaufre, gone into formulating the French 'National Line' in the years preceding the Second World War, rather than putting an implicit trust in the Maginot Line and thereby willy nilly playing the game of Hitler, the history of the world would have been quite different today.

Strategi d'Action is the third book to have come out from the General's pen. At the very outset he makes his aim clear. Strategy of action is quite different from strategy of deterrence. When you wish to prevent something happening that's deterrence, when you wish to achieve to something that's action. The world powers, particularly those of the free world, are banking too much on deterrence but it should be remembered that it is action alone that can get results. The domain of strategy in the present-day world is not restricted to the people in uniform. It is the political concepts that govern the strategy of any nation. National aims, interests, objectives and aspirations constitute the 'guiding star' of the national strategy. The winning of a war is of no avail unless the desired political aims are achieved. The General considers all the factors involved in securing the political aims. Coercive action should only follow when other means are really and truly exhausted. It would be wrong to rush in blindly and try and force a military solution where the problem really requires a political solution. The book embraces in its folds the art of diplomacy, the art of negotiating a problem across the table and even the art of guerrilla warfare vis-a-vis the pacification programmes. In fact *Strategy of Action* is a lucid appreciation of the factors that come into play in achieving the national objectives once they have been formulated at the very highest level.

The book should be read by all those who are and can be in responsible positions that call for formulating the national policies or for conducting the national affairs.

A.P.G.

THE SIEGE OF PARIS

by Robert Baldick,

(Published by Batsford Ltd., London; 1965). Pp. 248, price 35s

The Siege of Paris in 1870-71 by the armies of Bismarck, the Iron Chancellor of Prussia, was the last full-scale investment of a European capital. The events leading to the Franco-Prussian war are so well known that it is not necessary to recapitulate them here. Suffice it to say that as a result of the dispute about the succession to the Spanish throne, and the twisted version of the famous Ems telegram, Bismarck was able to manoeuvre France into a position where Napoleon III had no choice but to declare war against Prussia. This was at a time when Prussia was

so well prepared for the event that orders for the campaign had only to be taken out of their pigeon-holes, dated and issued to the commanders. On the other hand, the French army and Government were in a state of confusion and unpreparedness, and the French troops were inferior to the Germans in numbers also.

The war lasted for about six months, from first of August 1870 to the beginning of February 1871. The Imperial armies of Napoleon III were destroyed or bottled up during the first month of fighting, the Empire collapsed and the Emperor was sent as a prisoner to Germany. For the remaining five months, the war was carried on by the French under the Government of National Defence, (which was formed within the besieged city of Paris) in a remarkably courageous and spirited manner against hopeless odds.

The Government of National Defence blamed Napoleon III for the war and expressed its readiness for peace but not a peace involving loss of French territory. "Not an inch of our soil, not a stone of our fortresses", was the slogan which inspired and enabled the people of Paris to bear untold hardships and starvation. Gambetta escaped from the besieged city of Paris in a balloon and established branch seats of the Government in different parts of France from where he organised new armies whose incredible resistance astonished all Europe including the Germans. Inside Paris, Victor Hugo, the famous novelist, was inspiring the people by his eloquence and poems. But the task of saving Paris and France after the defeat of the regular forces was insuperable. The new armies were untrained, the enemy was firmly entrenched, and the efforts of the volunteers from within Paris to link up with the hurriedly improvised outside forces by making bold sorties to break through the encircling Prussian lines were costly and unsuccessful. On top of this, the Prussians resorted to indiscriminate bombing of civilian population.

Dr. Baldick in this extremely readable and interesting book does not give a detailed history of the war, but only a history of the siege, through the eyes and in the words of a number of journalists and diarists. He describes, mainly through quotations from such materials, how the people of Paris organised their defences, food supplies (markets for dogs' and cats' flesh and even rats), and a postal service through carried pigeons who carried not only official dispatches, but also letters from private individuals. The communications were reproduced on films of collodion which were ten times thinner and lighter than the paper on which they had previously been printed. This is how the process is described:—

"When the films were smooth and firm, 12 to 15 of them could be sent by one pigeon, each film containing an average of 2,500 dispatches. The first film would be rolled to the size of a pin, and then served as the axis of a cylinder of films rolled successively one round another. This cylinder was inserted in a quill two inches long, which was fastened with a waxed silk thread to one of the larger feathers of a carrier pigeon's tail." The films were read by being projected (through a megascope) on to a large screen. It is said that 60,000 out of the 95,000 messages entrusted to pigeon-post during the siege of Paris reached home.

All these sacrifices, hardships and inventions were however of no avail. By January Paris was on the verge of starvation, and the people were reduced to eating horses, dogs, cats and rats. There were constant disturbances outside the bakers' shops who could not honour even the wretched ration of 300 grams per head per diem. The winter of 1870-71 was one of the coldest on record, and coal and fire wood were exhausted. Trees were cut down and fires built in the public squares for the poor. After a heroic resistance for 19 weeks, Paris finally capitulated on 28th January. The peace of Versailles was signed and France elected an Assembly—the first Assembly of the Third Republic. Though defeated, the French were pleased to be rid of the Empire which had brought this humiliation upon them.

Dr. Baldick's account is a balanced one and he presents a sympathetic picture of the daily occupations, diversions and sufferings of the heroic people of Paris during the siege. The book has numerous illustrations taken from contemporary engravings and photographs which enhance its value. There is also a useful bibliography and an index. An altogether outstanding and competently written and produced work of military history, deserving of finding a place on the shelves of all lovers of good books.

P.N.K.

NEHRU; A CONTEMPORARY ESTIMATE

by Walter Crocker,

(Published by George Allen and Unwin Ltd. London; 1966). Pp. 186, price 28s.

Here is an outstanding book on Nehru who has made an everlasting mark not only on contemporary India but on the history of the times in which he lived. So much has already been written on Nehru but the present work is sure to find a lasting place for itself. Mr. Crocker has special qualifications for undertaking this task. Besides having a distinguished career as a diplomat he had the unique experience of observing Nehru closely day by day as a part of his official duties during one of the most eventful periods in our history.

Arnold Toynbee, the famous historian in his Foreword pays a high tribute to the work: "One of the great merits of the book is that it gives a picture of its subject that is true to life and he does this without any touch of condescension or cold-bloodedness".

The facets of Nehru's character are many and varied and nearly everyone who had come in contact with him had his own interpretation to give. In the present instance the incidents mentioned and observations of the author have an added significance. Even though he found Nehru captivating like millions of others who had come in direct or indirect contact with him, Mr. Crocker usually found it necessary to keep himself 'back into detachment'.

Many may not agree with the author's remarks about the Indian

setting in Nehru's day particularly on Indian nationalism, Hinduism and foreign rule but the part played by Nehru has been faithfully depicted. It is well known that Nehru had set his standards very high and that he was an idealist who found at the tail end of his life that all his dreams had not come to fruition. Some of the outstanding men of the age who had worked shoulder to shoulder with him 'deserted' him and became very vocal in their criticism of his work. But all of them had great faith in him and a conviction like that of Rajagopalachari that 'he alone could get them corrected.'

'Building and Destroying' contains the author's assessment of Nehru's achievements and failings and some of his observations on personalities like Rajagopalachari, Krishna Menon, Jaya Prakash Narayan and others are worth reading.

Though written soon after Nehru's death the book has made a notable contribution to the literature on the subject and is good food for thought.

G.S.

ERITREA 1641

by A. J. Barker

(Published by Faber and Faber, London; 1966). Pp. 248, price 36s.

I can well recall the admiration with which I read, while serving in what were still peaceful conditions in Burma in 1941, the announcement that a young Indian Sapper subaltern had been awarded the Victoria Cross for conspicuous gallantry during the advance into Eritrea. 2/Lt. (now Lt-Gen.) Premindra Singh Baghat had led a column along mine strewn tracks covering 55 miles in the course of four days, being blown up four times and lifting thirteen sets of mines himself as well as supervising the removal of many other obstacles which had been strewn in the way of the advance. Later I read with equal admiration of the exploits of Subedar Richpal Ram, 1st Rajputana Rifles, who was posthumously awarded the Victoria Cross for his gallantry at Keren.

All this, and more, is recounted in this excellent account of Eritrean campaign by Lt-Col. A. J. Barker. The Indian Army is rightly proud of its long list of Battle Honours, but none has been more gallantly earned than "Keren". There, in conditions of maximum hardship, Indian, Sudanese and British troops fought to dislodge the Italians from their seemingly impregnable defences. The author describes the fighting well, and pays tribute to the enemy who fought bravely and well. He also includes as an appendix the musical score of 'With Wellesley's Rifles at Keren', composed by a piper of the Queen's Own Cameron Highlanders as a tribute to the Rajputana Rifles alongside whom the Camerons had fought, died and conquered.

This is a first-class account of a campaign, for the outcome of which the Indian, British and Sudanese armies can be justifiably proud.

SALUTE THE SOLDIER

by Eric Bush,

(Published by George Allen and Unwin, London; 1966). Pp. 435, price 52s, 6d.

Though this anthology of prose and verse was compiled to do honour to the British soldier, it is a book for fighting men. The Prelude to Arms with which it opens quotes freely from the classics and there are tributes to the Indian army "the largest volunteer army the world has ever known". And if the tributes to the British soldier are sometimes over-generous, "the finest all round fighting man the world has ever seen" whom "none excels in all round character" and who "come what may, holds to his inflexible confidence in victory" there are also tributes "to the soldiers of the many races who in the comradeship of the Fourteenth Army did go on: who turned Defeat into Victory."

The Great Captains and others give their recipes for success. Samuel Johnson defines "the qualities which make an army formidable as long habits of regularity, great exactness of discipline and great confidence in the commander". Lord Moran believes that character is "the first and last essential of an efficient soldier: without it he will not long endure." Wavell pays tribute "to the Good Company, platoon or section leader who carries forward his men or holds his post and often falls unknown: these in the end do most to win wars". Slim is equally generous for "there comes a moment in every battle against a stubborn enemy when the result hangs in the balance: the issue then rests with the men in the ranks and their regimental officers, on their courage their hardihood their refusal to be beaten by the cruel hazards of nature or the fierce strength of their human enemy". Wellington puts it less elegantly: "It all depends on that article whether we do the business or not. Give me enough of it and I am sure". His Private Wheeler in turn requires only two things from his commander. "First we should always be as well supplied with rations as the nature of the service would admit. The second is we should be sure to give the enemy a d—d good thrashing. What can a soldier deserve more?"

There are plenty of lighter items too. An officer who applied for short leave is granted forty eight hours only "which is as long as any reasonable man can wish to stay in bed with the same woman". Shaw asserts that "when the military man approaches the world locks up its spoons and packs off its womankind" and "Lord Wellington does not approve of the use of umbrellas during enemy's firing and will not allow the gentleman's sons to make themselves ridiculous in the eyes of the enemy."

There are crisp short sketches of the great captains as they revealed themselves or as others saw them. Cromwell was "one of those men whom his very enemies could not condemn without commending him at the same time." Foch "learned to see other men's point of view and therein lay his true greatness". Haig "dedicated his life to the service of his country and his reward was the firm faith which the majority of his countrymen reposed in so loyal a servant". Of Wavell "no blow, fair or foul, military or political ever got past the shield of his integrity." And

there are intimate little details of their lives in their letters to their wives —Marlborough sailing for Europe at the outset of his great campaign to his Sarah: "It is impossible to express with what a heavy heart I parted with you when I was by the water side. I could have given my life to have come back though I knew my own weakness so much I durst not for I should have exposed myself to the company." Rommel to his Lu: "At night I lie open-eyed: racking my brains for a way out of this plight for my poor troops. I think of you constantly with heartfelt love and gratitude. Perhaps all will be well and we shall see each other again."

These are the tributes to those who fell in action. At Kohima --

When you go home
Tell them of us and say --
For your tomorrow
We gave our today.

At Cassino --

We polish soldiers
For our freedom and yours
Have given our Souls to God
Our bodies to the Soil of Italy
And our hearts to Poland.

At Edinburgh --

If it be life that waits I
Shall live for ever unconquered;
If death I shall die
at last, strong in my pride and free."

and a tribute from a Japanese writer who witnessed the execution of ten men, members of a raiding party captured near Singapore. "Every member of the party went to his death calmly and composedly and there was not a single person there who was not inspired by their fine attitude."

Your reviewer is no longer on the Active List and for that reason perhaps might have been unduly moved by the many splendid tributes to his brothers-in-arms. So he tried out the book on a young major who "stayed awake all night. I could not put it down." It is indeed a superb and fascinating anthology: a book to be strongly recommended to all who follow the profession of arms.

H.W.

MAO TSE-TUNG ON WAR:

(Published by Messrs. Naraindass and Sons, Dehradun ; 1966). Pp. 199, price Rs. 12.00.

The book contains the writings of Mao Tse-tung on the Art of War and its Strategies culled out from his works. For the most part, it deals with China's 'revolutionary war' as Mao calls it, and the 'War of Resistance against Japan.' It describes the exploits of the Red Army against the

very superior and best equipped army of Chiang Kai-shek. There is a long and masterly exposition of the tactics of guerrilla warfare, and those who want to have an insight into this type of warfare will do well to study this book. The book also contains three main rules of discipline and eight points of instruction laid down by Mao for his Red Army. As the saying goes, "it is easy to frame rules than to follow them." One of Mao's eight points of instruction is to 'treat the captives well.' But this is quite different from the treatment meted out to our officers and jawans during the Indo-Chinese hostilities.

This book will be very useful for those who are concerned with the planning of our war strategies to know the tactics of the Chinese and is especially commended to those of our officers and jawans who are keeping a constant vigil on our northern frontiers both in N.E.F.A. and Ladakh to forestall any surprise move by the Chinese Army which is offensively poised on our borders.

R.P.K.

JULIUS CAESAR : MAN, SOLDIER AND TYRANT

by Major General J. F. C. Fuller.

(Published by Eyre and Spottiswoode, London; 1965). Pp. 336, price 42s.

Here is another book from the pen of a mature analytical authority on subjects pertaining to war for there is no doubt that Maj-Gen. Fuller has spent practically the whole of his life in matters of such study. It is the task of a historian to disentangle truth from legend and in the present instance the task was all the more difficult due to the repetition of these legends until they became *idees fixes*. Caesar has, through the course of the centuries, been transformed into a mythical figure—a travesty of the actual self. While some have called Caesar 'the greatest man in antiquity', 'the greatest man of action who ever lived', and 'the greatest military genius', others more sober have attributed to him no new single innovation in the technique of soldiering at that time. One single factor, however, which emerges from the study of Caesar is that he was a great personality with an unshakable confidence in himself. With the present analysis General Fuller has come to a slightly different and original conclusion. "It is reasonable to suspect" he says 'that, at times, Caesar was not responsible for his actions, and towards the end of his life not altogether sane.'

General Fuller begins with a study of the historical aspects of the Roman Republics of the early days, the economic and army reforms and then the rise of Pompey. With this very short introduction the personality and character of Julius Caesar from childhood until his rise to political power are traced. It is interesting to note that the Roman army was basically an infantry army which was, no doubt, its main defect. Though the Romans loved horses they never organised them into an efficient cavalry and hence, their many a reverse. But all the armies then were similarly constituted. Caesar even though he won spectacular victories did nothing to change the basic composition of his army.

The campaigns of Caesar in Gaul and the subsequent wars reveal him in not very favourable light in spite of the brilliant successes which enabled him to become a demagogue—an idol of the people. Caesar flouted one of the basic principles of war for military planning. There was a virtual absence of logistical support and it seems that he depended always on his genius to solve the difficulties as they came up. 'Seldom was his army adequately fed. At Ilerda it was reduced to near starvation and at times during the blockade of Dyrrachium it subsisted on roots.' These defects, no doubt, adversely influenced both his strategy and tactics. These were basically the untrained infantry and the small numbers of his equally untrained cavalry. In the field of strategy Caesar comes out as 'a strategical Jekyll and Hyde'. But it was as a soldier that Caesar excelled all his contemporaries. Besides, he was a political genius who could relate war to politics and devise a grand strategy in which war was subordinated to a clearly defined policy that was popular with the Romans. Another great quality which brought Caesar his victories more than once was his astonishing capacity to make the best of a desperate situation through sheer force of will and strong faith in his own genius. It was this complete confidence in himself, whatever his other drawbacks, that made him one of the greatest fighting generals of the Classical age. This book is an outstanding contribution to military history.

G.S.

T.E. Lawrence

An Arab view

by Suleiman Mousa (translated by Albrt Butros);

Published by Oxford University Press, London; 1966) pp. 301, price 35s.

Expose! 'An Arab View' may be construed by some, as a mere attempt to tarnish the name of the legendary Lawrence of Arabia. Those given to hollow sensationalism (like Lawrence himself, it would ironically seem) may well try and capitalise on this sobering study of Lawrence's true achievements.

That, however, has not been Suleiman Mousa's object. He is perhaps the only Arab to have carried out a complete study of Lawrence. It is clear that his researches have been thorough and painstakingly done in the homeland of the Arab Revolt. This fact by itself distinguishes the book from all other studies of Lawrence, most of which draw their information from "The Seven Pillars of Wisdom". Mousa's real object is to prove that the Arab Revolt drew its inspiration from Arab leaders, rather than from Lawrence. This he does convincingly and lucidly, without allowing his sense of justice to be poisoned by bitterness.

Suleiman Mousa offers convincing arguments to prove that Lawrence's legendary influence and control over the Arabs, is a myth. Lawrence was but one of numerous British and French officers who assisted in demolition work. He gained the confidence of Allenby by skilful fraud. This led to the unquestioning acceptance of all his cleverly worded reports. Thus he claimed the laurels for the capture of Aqaba, whereas he had actually been nothing more than a passenger on the

expedition. Similarly, by distorting his reports on subsequent actions, he focussed the spotlight on himself. It would seem that Lawrence owed his fame to his deceptive imagination and unusual literary ability rather than the gift for strategy or tactics which some of his biographers, and, indeed he himself claims! Perhaps the old colonial habit of glorifying a fellow-countryman at the cost of the 'natives' also assisted him greatly.

Also, discussed are the personal traits which moved TE to such heights (depths?) of deception. Why did Lawrence want us to believe that he, and not the capable Arab Commanders, was responsible for the Turks' most shattering defeats? Maybe it was his violent hunger for fame and non-conformity, his hinted 'intellectual sadism'. Or was it merely his theatrical sense of the ridiculous and his run-riot literary flair? Feisal gave him a set of simple silk garments to wear in camp. These Lawrence described later as 'gold embroidered wedding garments sent to Feisal lately by his great-aunt in Mecca'! While acknowledging Lawrence's powers of endurance and exceptional literary ability, Mousa convincingly refutes Lawrence's claims to the fame and achievements which are the Arabs' just due.

'Arab View' is an exceedingly interesting work distinguished by the absence of baseless accusation. Somehow it heightens, rather than diminishes, TE's strange charm. A few pages towards the end contain an interesting comment on the work by AW Lawrence, TE's brother.

As an Arab view of Lawrence's contribution to the Arab Revolt, this eye-opening thesis is overdue by almost half a century.

K.

THE BATTLE OF ARNHEM

by Christopher Hibbert.

(Published by B. T. Batsford, London; 1962) Pp. 224, price 25s.

Large scale employment of parachute troops operations held great attractions, and promise, before and during World War II. The advent of helicopters has somewhat diminished this attraction since. However, few para operations lived up to their expectations and Operation MARKET GARDEN, the code name for the capture of Arnhem was no exception. It ended instead in one of those great epic tragedies which ennoble the history of warfare. The participants, British and Poles on the one hand, and the Germans on the other, brought out the best in their respective character and fighting reputations.

The capture of Arnhem bridge was the farthest of the three parachute divisional landings; the other two being by two American parachute divisions at Eindhoven and Nijmegen. If the design of the employment of the Airborne Corps was grand, the risks too were great; "I think we might be going a bridge too far", thought General Browning, its Commander but the opposition was considered to be negligible. The Germans were supposed to have collected a motley force, and that was

true to an extent. But the situation was changing and within a matter of days the Germans had already been able to do a certain amount of redeployment even as the operation was being planned. On top of that the German commanders, Model, Student and Bittrich were probably the best generals the Germans could have had in the area. In spite of the surprise, they acted energetically, efficiently and quickly, gauging correctly the rather plegmatic British reaction at the unit level. Their troops ranging in quality from the very young to the old, the sick to the highly efficient Panzars fought with stubborn resistance and offensive spirit of the Germans at their best.

It is not proposed here to discuss the strategic aims of the operations, and the well known divergent views on the subject, are amply and fairly brought out in the earlier chapters of the book. Neither is it proposed to dwell on the unit, sub unit and in some cases, individual level, of the fighting also brought out so admirably in the book; or the overwhelming tiredness after six nights and days of continuous fighting, of the behaviour of troops under intense stress, of the heroic assistance of some Dutch civilians, or the chivalry and the deceit exhibited by both sides, as vividly described. It suffices to say that these aspects of the battle even after a lapse of over twenty years, stand out significantly as victory for the human spirit.

What is, however, significant is to remember how so many little things going wrong can, and did vitiate the fortunes of the British. These are common and must be catered for in action. It is surprising, however, how these persist: break-down of communications between ground formations; between ground and airforces; the weather "packing up" at the crucial moment and re-supply missions not arriving, or when there, ignoring the frantic ground signals and dropping supplies into the wrong hands; confusion caused by separation of commanders from their headquarters, and of officers from their men. Even when the land link-up was taking place the progress could have been faster but some of the convoys were cluttering up on the only available road and leading to needless hold-ups because "some serious minded sapper" had put up a notice that the verges of the road might be mined and were dangerous. Some lorries bringing up the boats to assist in the evacuation of the troops took a wrong turning at Nijmegen and were captured by the Germans. All these incidents were not mere strokes of bad luck. They happen time and again in battle.

To many of our readers who have participated in action large or small, these facts of life of battle will have a familiar ring. To all soldiers the question will arise as to how such things must be prevented. Training to meet the unexpected, and training under the hardest conditions is one answer. Possibly another answer which might mitigate such shortcomings is what was written in the war diary of a German Depot Battalion Commander at Arnhem: "It would be wrong to play a purely defensive role and let the enemy gather his forces unmolested. Whilst it is not the rule to attack far superior forces, there are occasions when this must be done."

This book is strongly recommended not only for all parachute units, but as one which can be used as a basis for discussion of battlefield conditions, which could with profit be applied by all soldiers.

A.M.S.

CHARGE TO GLORY

by James D. Lunt.

(Published by Harcourt Brace and Company, New York; 1942) Pp. 248, price \$4.50.

The author vividly describes some of the greatest cavalry charges in history. He takes you galloping through the battlefields of Europe, America, India and Burma. How many people realise that the last cavalry charge was made by "Sandy" Sandeman of the Central India Horse in March 1942 at Toungoo in Central Burma? And to him the author dedicates the book. Dame Fortune always smiled on the brave cavalry men, whenever they charged into battle at a crucial time and turned defeat into victory. The author gives an insight into the meaning of the cavalry spirit or "panache" as the French call it. This sustained the cavalry man through the battle and inspired him to acts of supreme bravery.

There are some interesting incidents related in the book like the tactics of the Sikhs at the battle of "Aliwal", when in order to escape the blunt sword with a sharp point carried by British cavalry men, the Sikhs would lie flat on their horses protected by their headgear and shields carried on their backs and allow the British cavalry men to go past them, and then cut them down from behind with their sharp curved swords. The reader will discover the difference between the Curassiers, the Hussars and the Dragoons. How many know that the Russians had 35 horsed Cavalry Divisions in the Red Army in 1942? The author mentions several countries which have horsed cavalry still in service, but strangely forgets to include India. The book is full of spicy humour and anecdotes and makes excellent reading both from the historical point of view as well as for sheer entertainment. The author feelingly regrets the passing of an era and the emergency of the stark realities of modern warfare, with the "Dragoons, Hussars and Lancers now driving into battle in tanks or armoured cars, their sabretaches replaced by sadly prosaic map cases and their waiving plumes and gold laces by greasy overalls and berets." I am sure, many in the Indian cavalry will regret the passing of that era. However, those who believed that the cavalry spirit could not survive the disappearance of the horse have been proved wrong as shown by our own cavalry men. There still exists a certain bond amongst cavalry men which transcends all barriers national or international, and has been the envy of other fighting arms. Vive la Cavalry Spirit:

An absolute must for all those who have the honour to belong to the "La Arme 'Blanche'."

H.P.

CORRESPONDENCE

Correspondence is invited on subjects which have been dealt in the journal, or which are of general interest to the Services

To

The Editor,
The Journal of the USI of India
Kashmir House
King Georges Avenue
New Delhi

OUR MILITARY TRADITIONS

Dear Sir,

It is not surprising to see, that a controversial article like 'Our Military Traditions' by Lt.-Col. Sinha, has drawn criticism and observations from all quarters.

Brig. AB MC Pherson, CBE, MVO, MC, had a long association with pre-independence Indian Army. He may not have been fully aware of the change of outlook that has come in the Indian Army of today. With the passing of years the new generation of Indians, who have come to officer the army, have developed an attitude of mind which is totally unbiased by the activities and traditions of the pre-independence Indian army which was primarily officered by the British.

Brig. MC Pherson has drawn our attention to the subtle difference between unit traditions and national traditions. Though his contention is correct, it is felt that unit traditions should be based on the broad framework of national traditions. A unit cannot have traditions which are derogatory to national pride in any way. Comparison between units of British Army and Indian Army is not really convincing because, whereas the British have never been under subjugation, India has had the misfortune of being under foreign rule for nearly 200 years. This foreign power stayed in the country with the help of the native army. After independence the army changed hands, and along with the change-over, a number of traditions also followed. Some of these traditions may not be very honourable to an independent nation, for example, during Jallianwalabagh firing, some Indian units may have been ordered to open fire on the civilians but today no Indian Officer can cherish the memory and we would like to close it as a forgotten chapter. The conquered during the years of oppression may have been forced to carry out tasks whose memory may not be pleasant.

In this connection I feel we may refer to the US Army today. I do not think that any of the traditions being followed by the present-day US Army, date back to pre-independence and if it does, it cannot be in any way humiliating to them as a nation. Similarly the German Army today, I am certain, does not encourage any of its Nazi traditions.

which only a quarter of a century ago have been proudly followed. It would be very interesting to find out how many traditions created during the Vichy Regime are adhered to by the French Army of today.

Traditions die hard and to comment upon them results in touching very soft spots. But most traditions and customs have originated from utility at one time or the other. The spurs with the Wellington boots worn with mess overalls, was a utility item in good old days when horses were in use, but today are of little value when most of the transportation is done by vehicles.

Some of us, who have not seen the pre-1939 Army, look at most of the traditions from utility point of view and tend to have very little sentimental attachments to them.

British during their stay in India had to follow certain customs to keep their way of life intact. Their messes, their clubs, and their cantonments were small little cells where life was as British as they possibly could create in a foreign land. This life must have been very similar to what they led in Malaya, Burma, Kenya or in any other occupied territory. The present generation of Indian Army Officer, who criticizes the traditions, have criticized this very un-Indian nature which we have inherited, and tend to adhere to.

It will be interesting to note that all our army traditions are carried forward from British days, and have been created within the last two hundred years. Indian history is much longer than this period, and would it be surprising if we wanted to link up with pre-British period?

It is needless to say, that some army traditions are good and develop team spirit, esprit de corps and pride in our regiments. But we cannot these have to be sifted, correct values assigned to each and either adopted or discarded as dictated by common sense and intelligence.

Maj. D. Lahiri

The Maratha LIRC
Belgaum

SECRETARY'S NOTES

Subscriptions

Subscriptions are payable in advance. The financial year of the Institution is from January to December. Intending members can join at any time of the year, when back issues of the Journal for that year will be supplied.

Life Membership

Life Membership can be paid in instalments, provided these do not exceed four and are completed in the course of the financial year of the Institution.

Changes of Address

Members are requested to notify any changes of address to the Secretary's office, if possible give permanent address which will always find them e.g., a Bank.

NEW MEMBERS

From 1st April to 30th June, 1967 the following members joined the Institution:—

AGARWAL, Major D.P., E.M.E.	KOHLI, Major M.S., The Mahar
AHLUWALIA, Major S.S.	Regt.
BADHWAR, Major D., Engineers.	KULDIP SINGH, Major, The Dogra
BAHL, Major V.B., Artillery, (Life)	Regt.
BALASUBRAMANIAN, Captain K.A.	KUNDRA, Major S.P., Engineers.
BHASKARAN, Captain N.K.	MANN, Captain R.S., Artillery.
BHATIA, Major J.C., Engineers	MURTHY, Major P.S., Engineers.
BISWAS, Major R.M., The Maratha	OHRI, Major C.L., The Deccan
L.I.	Horse.
CHONA, Major W.S., Engineers.	PANJRATH, Major D.S., The Punjab
DAR, Shri A.K. (Life)	Regiment.
DAS GUPTA, Commander R.N.,	PHADKE, Captain M.D., 8 Gorkha
Indian Navy.	Rifles (Life)
GREWAL, Major A.S., The Para Regt.	PROTHI, Major S.R.
GROVER, Major I.L., 64 Cavalry.	RAMESH CHANDRA JOSHI, Major,
HINDUJA, Captain S.M., Artillery.	The Garhwal Rifles
JAGTAP, Flt-Lt. S.R., IAF.	SATINDER SINGH, Captain, A.S.C.
KAKKAR, Major N.K.	SIKKA, Major P.M.
KARTAR SINGH, Captain, Engineers	THAREJA, Major S.C., Engineers.
(Life)	VATSA, Lieut. I.P., Artillery.
KHANDURI, Major B.C., Engineers	

Nine officers' messes and institutions were enrolled as subscribing members during this period.

BARR AND STROUD LIMITED

Barr and Stroud Limited was founded in 1888 when Professor Barr (an engineer) and Professor William Stroud (a physicist) successfully designed and built the first single observer coincidence rangefinder, as a result of an advertisement issued in "Engineering" by the War Office. Although the British Army did not for some time standardize on Barr and Stroud rangefinders (retaining a two-observer instrument) the Royal Navy soon started to equip ships with these new rangefinders.

It is interesting to note that before the first world war a large business had grown up and branch factories had been established in France, Austria and Hungary. By 1914 the reputation of the Barr and Stroud rangefinders had become world-wide and Germany was the only major naval power whose warships were not equipped with Barr and Stroud instruments, while they were being supplied in very large numbers to the French Army. During this period the firm had also developed naval and military fire-control gear and other allied equipment.

After the first world war when the firm had been in fully extended production, a period followed during which it was necessary to concentrate on civilian products. Among developments at that time were cinematograph projectors, a remarkable motor cycle engine, the optophone (for enabling blind people to read ordinary print by converting letters into recognisable sound signals), civilian binoculars, etc.

With the policy of re-armament from 1930 onwards, Barr & Stroud were increasingly active up to the end of the second world war.

The development of radar started a decline in the optical rangefinder business. Although large rangefinders (up to 42 feet base length) were being manufactured during the war, their days were numbered. After the end of the war the rangefinder business was reduced to the manufacture of smaller rangefinders for military use (including tanks), survey and navigation, and such vessels as cable laying ships. These smaller rangefinders are still in regular production, particularly those with 1 metre of 80 centimetre base length.

After the second world war Barr & Stroud was again faced with a massive cut in defence orders. The Company reacted to this in four ways: by undertaking sub-contract work for other firms, rapidly expanding its laboratories, building up an electronics department and developing a number of civilian lines of its own. Immediately after the war many engineering companies were faced with large numbers of orders for civilian equipment that they could not possibly themselves fulfil in a reasonable time. As a result Barr / Stroud, with capacity available, manufactured for other firms such products as printing machines, book stitching machines, bread slicing machines, toffee wrapping machines, etc. In 1950, however, there was again defence work which now included a considerable amount of contracted research and development. Barr & Stroud were, and are, in a strong position in this context as their facilities include optics and optical glass manufacture, precision mechanical engineering, electrical engineering and electronics, backed by impressive laboratories and strong teams of graduates and other technically qualified men.

Defence work to-day includes contracts for the Royal Navy, the British Army and the Royal Air Force. In addition defence contracts are received from many commonwealth, N.A.T.O. and foreign countries. Such products have included automatic code generators, guided missile components, gunnery, torpedo and missile control equipment, heated windows for optical instruments, infra-red periscopes, photonymographs (for lettering maps), special radar equipment, waveguide equipment, weapon sights and, of course, coincidence rangefinders.

On the civilian side products include dendrometers (for measuring the volume of standing trees), double monochromators (for laboratories), electric wave filters and networks, fibre optics, low light television cameras (for use in nuclear reactors), integrating microdensitometers (for histo-chemistry research), Kerr cell equipment, lasers, optical interference filters, precision bevel and other gears, radiation pattern recorders (for plotting aerial diagrams), remote viewing instruments, smoke indicators, ultra-high speed cameras, vacuum grown crystals. Civilian customers include various government departments, the United Kingdom Atomic Energy Authority, research laboratories of all types, industry, etc.

There is a substantial export business and agents have been appointed in many countries abroad.

Barr & Stroud has seen many changes since the days of its foundation. What has not changed, however, is the scientific basis of its work and its concentration on high quality and precision. The Company, founded by an engineer and a physicist, is still run by engineers and physicists and has maintained its independence throughout, although today a public company with shares quoted on the stock exchange. It is a Scottish company and, except for a London office, is located in Glasgow. This perhaps explains its sturdy independence.

BARR AND STROUD

Barr and Stroud Limited has been applying scientific principles to defence problems since 1888.

Today, research, design, development and production departments continue to serve the defence needs in many fields, including



- precision engineering,
- optical sights,
- lasers,
- infra-red materials and equipment,
- electronics,
- fibre optics,
- electro-mechanical techniques,

ENQUIRIES ARE INVITED

BARR AND STROUD LIMITED

Caxton Street,
Annesland,
Glasgow, W. 3
England.
Tel.: JORDanhill 9601
Telex : 778114

Kinnaird House,
1 Pall Mall East,
London, S.W. 1
England.
Tel.: WHItchall 1541
Telex : 261877